Regime Stability and Persistence of Traditional Practices*

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Abstract

I investigate the role of national institutions on persistence of cultural norms and traditions. Why does the harmful tradition of female genital mutilation (FGM) still persist in certain African countries, while in others it has been successfully eradicated? This paper contributes to understanding of the stability and decay of social and tribal norms, institutions and practices, by exploring the conditions under which female circumcision is abolished. People are more willing to abandon their institutions and traditions if they are sure that the government is durable enough to set up replacements for them in the long term. If the regime is weak, people revert to their traditional cultural norms in order to reduce uncertainty and minimise the risks of interaction between people. I exploit the fact that ethnic groups in Africa were artificially partitioned by countries' national borders and show using country-ethnicity panel dataset that in general, one standard deviation in political regime durability explains a 12.5% of standard deviation of share of circumcised women. I confirm that the results are unlikely to be spurious by using a number of identification strategies and showing that results are robust to an array of control variables and robustness checks.

JEL Codes: D19, J15, O12, Z13

Keywords: Traditional Practices, Female Genital Mutilation, Regime Durability, Institutions

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1 Introduction

Why are some harmful and supposedly obsolete traditions still exercised, while others have been successfully eradicated? Why for instance was footbinding abolished while Female Genital Mutilation (FGM) or the wearing of neck rings are still widely practiced in many developing countries? While these phenomena are cultural (or religious), scholars have demonstrated that the culture itself might be endogenous to the economy and institutions. Alesina et al. [2013], Boyd [1988], Boyd and Richerson [1985, 1995], Nunn [2012] describe culture as a heuristic process, and traditions appear because people find those traditions beneficial. Over time those rules become deeply held traditional values and religious beliefs (Gigerenzer [2007], Kahneman [2011]). Similarly, if tradition is no longer useful and becomes obsolete, culture should dispose of it over time, also as a part of a heuristic process. However, sometimes this process fails.

Some traditions can be abolished relatively quickly. For example, after a millennium of practicing footbinding in China, it was stopped in one generation (Mackie [1996])[1]. However, some other obsolete practices, for instance FGM, are still widely practiced despite numerous efforts of local governments, international NGOs, and even a negative attitude toward the tradition among people who practice it (UNI [2013]). Understanding why it is happening, and how to increase the speed at which these harmful traditions are abolished, are highly important questions for development because of their harmful effects on people's health, education and quality of life. In addition to FGM, there are many other harmful traditions still being practiced, such as: neck rings, lip-plates, preferences of sons toward daughters, female infanticide, early marriage, force-feeding, nutritional taboos and also practices related to child delivery, usage of traditional medicine and witch doctors, etc[2].

The question arises as to why, even within the same ethnic group partitioned by countries' borders, some tribes keep their traditions and some do not. I contend that political institutions are crucial for changing traditions and beliefs. More precisely, the stability of the political regime matters. The causal mechanism is as follows: a durable regime means that whatever government policy is currently being enforced against the tradition is unlikely to change in the long run, and people will benefit from abandoning the tradition. However, a weak democracy or autocracy means that the political situation is unpredictable and might change, so in this case it is better to stay with the status quo. Similarly, if in the unusual event of a regime being *de facto* in favour of such harmful practices (e.g. Sierra Leone in the case of FGM, or the practice of early marriage in Saudi Arabia), the effect of regime durability will be the opposite. The intuition behind these predictions is straightforward: regime stability affects cultural norms and traditions through expectations about how long the political regime that support changes in their social norms will last.

In case of FGM, these are mainly governmental or nongovernmental international nonprofit organizations

[1] It is consistent with the findings of Alesina and Fuchs-Schündeln [2007] that believes about redistribution and government interventions in Eastern and Western Germany will converge in 20 to 40 years.

[2] Moreover, we can also interpret traditional practices as a traditional\tribal\religious law\social norms system practiced by society. Even if it is not harmful per se, if one particular region of a country starts to follow its traditional laws instead of the official code system it can impede the country's wider economic development and quality of domestic institutions (Tabellini [2008]).

(hereafter NGO) who try to fight against this harmful tradition. In most cases people are willing to abandon obsolete harmful tradition, while knowing that NGO will enforce its abolishing: "*...we were asked to abandon an age-old practice, and we accepted although we were never exposed to all the disadvantages everybody is talking about...*" (UNICEF et al. [2008]). Nevertheless, FGM being deeply held status quo tradition will easily reappear in case nobody constantly pushes its eradication. In this case for it to disappear, NGO should maintain its activity for subsequent time interval. Local population is aware that NGO can come only if country's political regime is stable and thus form expectations if NGO is going to continue to pursue its efforts toward eradication of FGM. Thus instability of national regime causes people to reverse back to their tradition. As a striking example of Mali where NGO activity in a large number of villages lead to dramatic decrease in FGM shares. However after a coup in 2012, households started to circumcise girls again[3]. As the article states: "*...side effects of the political turmoil that struck the country in 2012 and continues today, making government attempts and commitments by nonprofit groups to improve conditions for women a huge struggle*". Another example can be found in Caldwell et al. [2000]: "*many mothers who continue to "circumcise" their daughters say that they would desist if only that message were much stronger, thus guaranteeing that uncircumcised girls were in the majority. They feel that it is unfair of the government to promote change without doing it very loudly and clearly*". Hence, regime stability has effect on the persistence and decay of cultural norm and traditions (e.g. FGM) through people's expectations about the enforcement of its eradication, conditional on anti-FGM policy conducted by the government or NGO.

Without going into details about data construction that will be covered in Section 3, as an evidence for the effect of regime durability, in Figure 1.1 I present a graph of women's average lifetime probability to undergo circumcision (in blue) and average lifetime measure of regime durability that I use later in the paper (in red) by cohort. We can observe that both lines clearly go in opposite directions. It provides no prima facie evidence against the "regime stability" hypothesis.

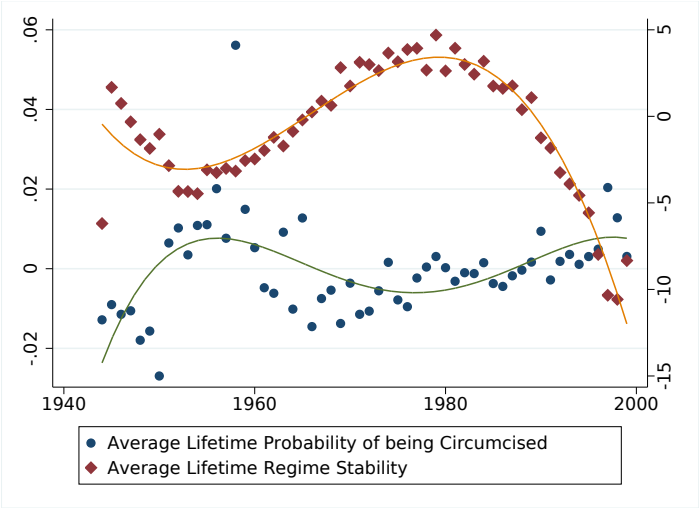
In this paper, I investigate the role of national institutions on the persistence and decay of cultural norms and practices in Africa. I describe the main existing hypotheses of persistence of traditional practices and solve the puzzle as to why sometimes they work and sometimes they don't. By using Health and Demographic Survey and Multiple Indicator Cluster Survey (hereafter DHS and MICS) individual level datasets for countries with FGM practices I construct a panel dataset and show that because of regime durability traditions are gradually being abandoned in some places, while in other they persist.

Following Alesina et al. [2011], Michalopoulos and Papaioannou [2014] I use artificial political partition of the African countries by the colonial authorities for the identification of the effect of regime stability. The partition resulted in ethnic groups having similar cultural norms and traditions being randomly assigned to different institutional environments. Michalopoulos and Papaioannou [2014] showed that political institutions have no effect on within-ethnicity economic performance thus ruling out indirect effect of institutions on cultural norms and traditions through income. Thus, institutions can have only direct effect on the persistence of the cultural norms, such as FGM. As can be observed in the illustrative case in the

[3] `http://passblue.com/2014/11/20/with-mali-in-political-turmoil-high-fgm-rates-persist/`

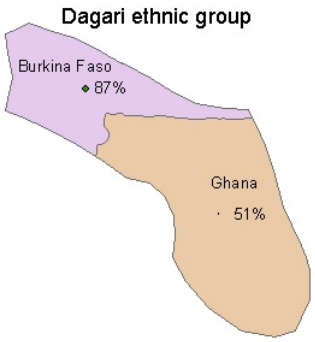
Figure 1.2 *Dagari* ethnic group was artificially divided between Burkina Faso and Ghana by the colonial administration[4]. Despite the similarity in socio-economic characteristics, the FGM rates differ significantly along the border: 87% in Burkina Faso vs. 51% in Ghana. Similarly, many other ethnic groups separated by countries' borders have different shares of the FGM prevalence (Figure 1.3).

Figure 1.1: Regime Durability and FGM



Notes: average probability to undergo circumcision during the eligible lifetime by cohort (blue dots) and average regime durability during that time interval (red dotes) for all countries in the sample. Constructions of eligible years for FGM and description of the regime durability measure are shown in the Section 3. All values are de-trended and without country fixed effects. Ethnic groups that never practice FGM are omitted.

Figure 1.2: FGM Prevalence in *Dagari* Ethnic Group



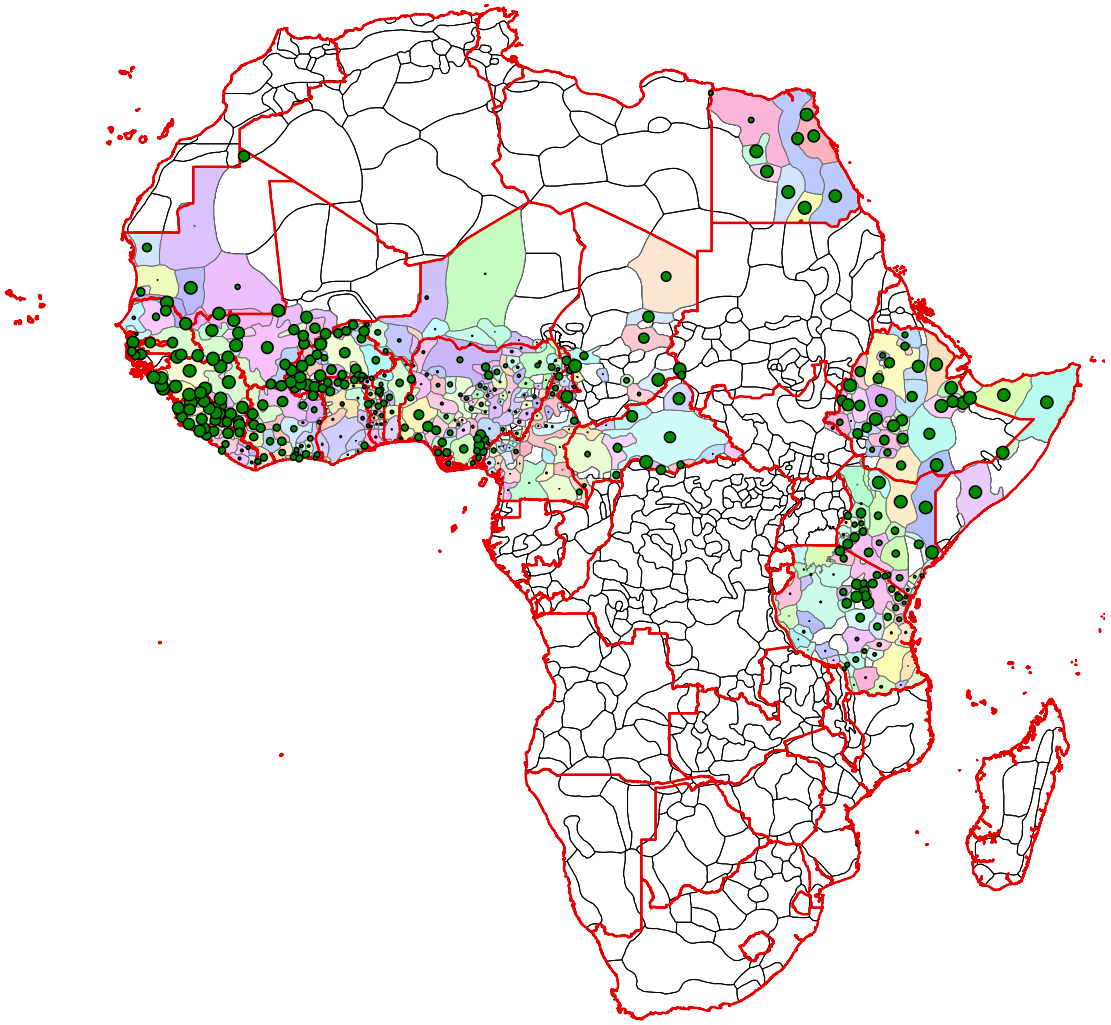
Notes: Dagari ethnic group partitioned between Burkina Faso and Ghana. Source for ethnic borders: Murdock [1959]. FGM rates: DHS Burkina Faso 1998, DHS Ghana 2003.

I use this quasi-natural experiment setting, where ethnic groups are randomly divided into countries that experience varying regime durability over time, while controlling for other possible institutional factors that

[4]The border was drawn along the Black Volta river from south to north and straight line from west to east.

might have an effect on FGM persistence. I find that ethnic groups that are exposed to higher regime stability experience lower rates of FGM prevalence conditional on having an anti-FGM policy. Moreover, the effect of regime durability is much higher for democratic regimes than for autocratic ones. On the contrary, higher regime stability in regimes that do support FGM or do not have a consistent anti-FGM policy experience higher FGM prevalence. This finding is consistent with the anecdotal evidences documented by NGOs working on abolishing FGM, and helps to explain why the same ethnic groups in different countries have strikingly varying rates of FGM prevalence.

Figure 1.3: Historical Boundaries of Ethnicities before Colonization and FGM Prevalence



Notes: Data for Sudan, South Sudan and Uganda is not available. Other African countries have FGM rates close to zero. Source for ethnic borders: Murdock [1959]. FGM rates: latest available DHS surveys with GPS coordinates and FGM questionnaire. Data for Mauritania and Somalia are taken from MICS. FGM rates for Chad, Gambia, Mauritania and Somalia are merged to Murdock [1959] map by using question about ethnic group of the respondent.

Alternative explanations for the differences in FGM prevalence can be due to some other institutional

variables, such as political regime or state capacity. Alternatively, it can be a third variable that correlates with country's FGM prevalence and regime stability, such as NGOs activities or governmental health programs. I pursue a number of identification strategies that suggest that the relationship is indeed causal.

The first strategy is to control for other institutional variables, most notably, political regime, anti-FGM legislation, and state capacity. I show that my estimates are robust to the alternative measures and proxies for regime durability and an array of control variables. I find that controlling for these variables leaves the estimated effect of regime durability virtually unaffected. To alleviate concerns about the NGO activities and governmental health programs, I show that regime stability has no effect on other health related outcomes, such as infant mortality or HIV prevalence. Moreover, following Altonji et al. [2005], Bellows and Miguel [2009], Nunn and Wantchekon [2011] I show that the influence of unobservable factors should be big enough relative to observable factors to explain the relationship between regime stability and FGM prevalence, making my estimates unlikely to be driven by unobserved heterogeneity.

Second, following Jones and Olken [2005] I use the death of a country's leaders due to natural causes as exogenous shock of regime stability. I document substantial increase in FGM prevalence after each death of national leader, that is associated with the shock of regime stability. While this approach, allows to solve previous endogeneity problems and use rich panel data, the number of such natural deaths is small and exclusion restrictions concerns may appear.

Finally, I show that regime stability theory is about people's expectations about the future, by showing that it affects women's willingness to circumcise their daughters. Using cross-section of individuals I employ IV strategy by using regional variation in ruggedness of the terrain, to ensure the fact that the regime stability has a causal effect on the decision about daughter's circumcision. As harsh rugged terrain makes it easy to hide, similarly to the story developed in Nunn and Puga [2012], ruggedness may also conceal illegal armed groups that disrupt states and directly affect regime stability (Fearon and Laitin [2003]). This approach, allows me to estimate LATE and address measurement error and unobserved heterogeneity issues while giving up panel level estimation due to the cross-sectional nature of the instrument.

This study seeks to outline both the factors that influence the persistence of harmful traditions, and the ones that help to promote good health practices. This paper benefits economic science in several ways. First, it contributes to the field of political economy by shedding light on the persistence of cultural traditions (Alesina and Giuliano [2013], Bisin and Verdier [2000, 2001], Di Miceli [2015], Voigtländer and Voth [2012]) and their decay due to institutional changes, creating another link to the effect that institutions have on economic development through cultural norms, and finds support for this theory in the data. Second, I contribute to the literature of existence and evolution of social norms through understanding stability and decay of tribal institutions and practices (Bisin et al. [2009, 2011], Ellickson [1989, 1991], North [1990]). Third, it contributes to the study of a role of national institutions on African development. On the one hand, Acemoglu et al. [2005], Helpman [2009] highlight the importance of the institutions as a key determinant of economical underdevelopment. On the other hand, Nunn et al. [2013], Spolaore and Wacziarg [2013] emphasize the importance of geographical, cultural and genetic traits in comparison to the role of institutions,

and Michalopoulos and Papaioannou [2014] find no effect of national institutions on the within-ethnicity economic outcomes. This study essentially shows that institutions do have an effect on cultural norms and traditions, that have negative effect on economic development. Thus it links points made by Acemoglu et al. [2005] and Spolaore and Wacziarg [2013] as institutions might not have a direct effect on economic underdevelopment but have an indirect effect.

Finally, studying harmful practices such as FGM, contributes to the field of development economics, as they have a direct effect on economic growth through increased women's death rate, worse physical and mental health, lower educational achievements and labor market outcomes, and productivity of women (Bellemare et al. [2015], Bicchieri and Marini [2015], Diabate et al. [2014], Efferson et al. [2015], Wagner [2015]). This study contributes to those few studies that shed light on our understanding of the persistence of FGM in different countries and tests the existing hypotheses (Mackie [1996, 2000, 2003], Mackie and LeJeune [2009], Shell-Duncan [2001, 2008], Shell-Duncan and Herniund [2007], Hernlund and Shell-Duncan [2007], Shell-Duncan et al. [2011]), and thus provides policy advice that can be used by NGOs and governments that are interested in the abolition of such harmful practices. Useful policy advice might help to reduce the number of deaths and cases of mutilation, and contribute to the broader issues of ending violence against children and women and confronting gender inequalities.

The paper is organized as follows. The issue of Female Genital Mutilation is introduced in Section 2. Section 3 describes the data. Estimation results and robustness checks are presented in Section 4. Alternative identification strategies are introduced in Section 5. Section 6 contains concluding remarks.

2 Female Genital Mutilation: Historical Background and Conceptual Framework

In this section I explain the cultural phenomenon of FGM and cover some background facts about it[5]. In addition, I provide some historical facts about the history of FGM and formulate hypotheses about its persistence and ways of abolishing it. Later in the section, I show evidence of the regime stability theory in the data.

2.1 Background and History

Health and human rights are known to be among the most important determinants of economic growth. Persistence of FGM has an extremely harmful effect on women's physical and psychological health and also on the health of their children (Brady [1999], Dorkenoo and Elworthy [2006], Elnashar and Abdelhady [2007], Koso-Thomas [1987], Morison et al. [2001], Shell-Duncan and Herniund [2007], Toubia [1994], Wagner [2015]) even if it is done by doctors (Shell-Duncan [2001]). Furthermore, FGM leads to a high death rate among

[5]For anyone interested in the topic beyond the material covered in this paper, probably the best paper to read is Mackie [1996].

girls due to bad sanitary and surgery conditions. FGM procedures can cause severe bleeding and urinating problems, and later cysts, infections, and infertility as well as complications in childbirth and increased risk of newborn deaths.

As it is known, some predominantly Muslim western, eastern, and north-eastern regions of Africa (Figure C.1 in Appendix C) and also some countries in the Middle East (Iraq and Yemen) have tribes that exercise circumcision for girls (e.g. UNI [2013]). According to WHO, there now exist more than 140 million living girls and women in these 29 countries who have been cut, and another 30 million are estimated to be at risk over the next decade. Some people mistakenly blame Islam as a religion for these facts; however Islam has little to do with it directly, as it regulates circumcision of boys only[6]. To be more precise, circumcision of girls is a part of indigenous beliefs (that merged with Islam) of some of the ethnicities there. Despite the interventions and anti-FGM legislation it is not clear why some tribes still continue to exercise FGM, while others have stopped, even if we take the anti-FGM laws into account (Miller et al. [2005], Rahman and Toubia [2000]). More importantly, such measures can be harmful by themselves either by neglecting health concerns in favour of woman rights (Shell-Duncan [2008]), by leading to unintended and potentially harmful effects on the way FGM is performed (Shell-Duncan [2001]), or directly due to attempts of people to bypass the FGM-ban (Camilotti [2015]).

The major existing theories about persistence of FGM and other harmful practices were developed by sociologists and were summarized in Mackie [1996], Mackie and LeJeune [2009], Shell-Duncan and Herniund [2007], Unicef et al. [2007]. Translating into the language of economics, the male's primary goal is to father as many children as possible, however it is obvious that only a woman can be sure whether a particular child is hers or not. In this situation men - especially in polygamist societies - are ready to take some costly action (e.g. FGM or footbinding) in order to increase the probability that children will be theirs[7]. By undergoing FGM, women become less promiscuous due to the fact that they lose the opportunity to enjoy sex. In this case another question arises - why do women agree to such costly action? If a man from a high economic strata wants to take such action and a woman of the same economic status does not, another woman from the lower income family may agree to it. As an end result, all women with the exception of those in the lowest income group agree to undergo this costly action[8].

FGM first appeared in the territory of current Northern Sudan and was transmitted through Africa with the slave trade and also indirectly with the spread of Islam. Following the establishment of the Arab Caliphate, Sudanian sex slaves (who underwent *infibulation*[9]) were transferred via trade routes (Beachey

[6]Indirect effect of Islam will be described below, however curious readers can also find some interesting hypotheses in Mackie [1996].

[7]Such costly actions are common in nature: e.g. some male spiders perform FGM for the same reasons (Mouginot et al. [2015]).

[8]There is evidence that in China, only the poorest women and women from the poorest agricultural households who needed to work in a field did not have their feet bound.

[9]The World Health Organization (WHO) categorizes four types of FGM: i) *clitoridectomy* – partial or total removal of the clitoris and/or the prepuce; ii) *excision* – partial or total removal of the clitoris and labia minora, with or without excision of the labia majora; iii) *infibulation* – narrowing of the vaginal orifice by cutting and bringing together the labia minora and/or the labia majora to create a type of seal, with or without excision of the clitoris; iv) *other* – pricking, piercing, incising, scraping and cauterization. The definitions above are taken verbatim from WHO et al. [2008].

[1976]), thereby causing FGM to become wide-spread in some polygamist regions. In addition, some ethnicities adopted polygamist traditions upon converting to Islam. In fact conversion to Islam was endogenous because of the trade routes (Michalopoulos et al. [2012]), slavery concerns[10] or because of polygamy[11]. The spread of Islam with its polygenic culture, and the slave trade of women from the west bank of the Red Sea who had already undergone FGM shaped the current borders of the "FGM zone" (Freeman-Grenville [1975], Mackie [1996], Widstrand [1964]).

We can indeed see a strong correlation between FGM and Islam, in the fact that many African women believe that FGM is required by Muslim tradition and some Muslim scholars claim the same. In fact, Islam does not support female circumcision. As Muhammad said (Mackie [1996]) in several of the *Hadieth*[12], FGM is "noble but not commanded" and it is advised that "female converts refrain from mutilation because even if pleasing to the husband it is painful to the wife". Under *Sharia* laws, the cost of promiscuous behaviour for women is too high (death by stoning). In this case, another costly mechanism for preventing women's promiscuous behaviour is excessive.

Despite the fact that this practice is purely cultural[13], this explanation of the persistence of FGM is still debatable. For example, Bellemare et al. [2015] state that continued practice of FGM is almost purely explained by household- and individual-level factors, while others claim that it can be explained by the tribal identity (Karanja [2003]), or more broad ethnicity (Yoder et al. [2004]). Nevertheless, these works neglect the cultural constituent and collective nature of FGM (Mackie [1996, 2000], Hernlund and Shell-Duncan [2007]) thus forcing us to search for answers in the literature based on sociology and anthropology hypotheses.

All existing papers describing persistence of FGM and the ways to stop it can be generalized into two hypotheses. The first one suggests that modernization of the society can have a negative effect on the number of FGM cases through many channels. It can decrease support of FGM either through increasing the bargaining power of women and their rights (Ebrey [1991], El Dawla [1999], Yount [2002], Easton et al. [2003], Ebrey [2003], Finke [2006]), or through the adopting of "modern values" and education (Easton et al. [2003], Finke [2006], Hayes [1975], Kennedy [1970]). For example, importance of women's right is shown in Harari [2014], wherein the author uses changes in Kenyan legislation (improving inheritance rights of women) to show that such increases in female's bargaining power lead to a lower probability of women being circumcised in ethnic groups where FGM is not universal[14]. Better education may also lead to decreasing numbers of FGM cases, either because higher education means acceptance of "modern values" or because of an increased understanding of the fact that they are losing face in the world. For example, women with no education support the continuation of FGM eight times more than women with secondary or higher education

[10]It is forbidden for Muslims to sell another Muslim into slavery, thus African populations were converting to Islam in order to avoid becoming slaves. Since Quran forbids the trade of people who are Muslim, some African tribes in proximity of the Arabic trade routes started to convert into Islam in order to prevent being slave-traded.

[11]In pre-Islamic Africa, men were allowed to have many wives and concubines, and in Islam it is permitted to have up to four wives and concubines

[12]Stories about deeds and sayings of the Prophet Muhammad.

[13]And as it is shown in Alesina and Giuliano [2015], Dippel [2014], Voigtländer and Voth [2012] cultural issues are highly persistent.

[14]This result supports recommendations made in Gruenbaum [1982].

in Ethiopia, and four times more in Sudan. As another example of modernization theory, Kennedy [1970] describes the case of Nubian tribes living in Egypt who, after losing their land due to construction of the Aswan dam on the river Nile, switched to wage labour and thus to urban values, which resulted in higher education and adoption of modern egalitarian ideas and changed their *infibulation* tradition for the milder FGM case (*clitoridectomy*). Hayes [1975] predicted that as FGM's latent functions are a contribution to the village economy (being a midwife or via limiting population), modernization should weaken the FGM tradition. Finally, Bicchieri and Marini [2015] document correlation between FGM rates and social capital.

In contrast, some papers (Mackie [1996]) believe that modernization won't help to stop FGM, as in comparison with other "horrible practices" (such as footbinding in Imperial China), FGM even in its worst state (*infibulation*) does not hinder female labour directly. Cloudsley [1983] believed that urbanization, which took place in the case study by Kennedy [1970] caused Nubians to accept a lighter form of FGM which was accepted in Egyptian cities due to the fact that Egyptians were more numerous and prosperous, but not due to modernization.

The second hypothesis states that FGM persists because it is a social norm (Easton et al. [2003], Hayford [2005], Lightfoot-Klein [1989], Mackie [1996], Shell-Duncan and Herniund [2007]). To have a better chance of finding a good match at the marriage market you need to follow a social norm, and thus must be circumcised[15]. Moreover, there are direct income benefits, as, for example, in Uganda a circumcised girl will earn her family 25 more cows as a bride-price than non-circumcised[16]. By not following the social norm a woman risks finding a worse match in the marriage market or even being punished by her kin[17]. Following Schelling [1980], Mackie [1996] explains persistence of FGM and footbinding through coordination problem where all people choose between following the social norm (e.g. circumcise the daughter) or not based on their understanding of quality of life without FGM and their expectation of share of other people who will deviate from the practice. If importance of quality of life without FGM is clear, the reason behind the choice of other people is more strategic: people want to secure marriage for their daughters, thus if everybody will circumcise their girls, uncircumcised girl will be worse off on the marriage market. If few people will circumcise their daughters, uncircumcised girl won't be worse off on the marriage market. In the light of this logic and the example of Chinese anti-footbinding campaign, modern NGOs and African governments try to get rid of FGM by explaining adverse health consequences of FGM and trying to convince villagers to pledge not to circumcise their daughters.

Summarizing, the equilibrium where all girls do or do not have FGM depends on their mothers experience/ knowledge that life without FGM is better (e.g. daughter will enjoy sex) and also on the fact that parents will be able to find their daughter a good match in the marriage market contingent on the fact that she was not cut - i.e. public opinion about necessity of FGM. Thus in Mali 58% of girls who have been cut are daughters of mothers who think that FGM practice should be stopped. A similar story applies for men, as

[15]For example, Wagner [2015] shows on the sample of 13 countries that women who undergone genital circumcision are on average 40% more likely to get married.

[16]`http://www.karinweber.info/_uploaded/Good-Practise-Public-Declarations-on-FGMC-Abandonment.pdf`

[17]For example, for some ethnic groups of Guinea-Bissau, uncircumcised women are not considered clean enough to prepare food, and thus are ostracised by fellow villagers; in Uganda they can be accused in witchcraft, etc.

they also derive less satisfaction from having sex with women who were cut (Boddy [1982], Lightfoot-Klein [1989], Makhlouf Obermeyer [2005], Shell-Duncan et al. [2011]). For example in Guinea, where more than 85% of women are cut only 19% of women think that FGM practice should be eliminated vs 42% of men who think the same.

As evidence in favour of this hypothesis a causal effect of public opinion was demonstrated in Blaydes and Platas Izama [2015], where the authors showed that mothers whose first child is male (which is associated with social values that harm women) are more likely to believe that FGM should continue. Hoff [2015] provides a case of abolishing FGM practices in Senegal conducted by an NGO and claims that lesser social exclusion of individuals who do not undergo circumcision helps to decrease the number of FGM cases. However, Bellemare et al. [2015] claim that persistence of FGM is almost purely explained by household and individual factors, thus contradicting Mackie's point about importance of securing the marriage market that exists on village or regional level. Finally, Efferson et al. [2015] provide evidence that FGM are not entirely consistent with the social norm hypothesis, while not rejecting other hypotheses developed by sociology and anthropology scholars.

Nevertheless, the presence of FGM can still be influenced by contemporary political factors that can have an effect on it through the mechanisms described above[18].

2.2 Durability of the Regime and FGM

2.2.1 The Mechanism

Why do traditional practices exist? If a tradition is strong, it does not need any special understanding by the people practicing it; it is simply the natural environment in which people live, and they are not always aware that they are living a "tradition". Ordinary people continue to live as their fathers and grandfathers lived, -e.g. circumcising women-, and the presence of traditional norms has allowed them to structure their interaction with the environment to reduce the uncertainty in relationships between people. Traditions become relevant precisely when life begins to change rapidly, and the traditions are destroyed or under threat of eradication. When old rules of the game do not work anymore in the drastically changed conditions, and the new rules have not yet been formed, chaos often results[19].

In this situation, if a country with a durable political regime is trying to eradicate a tradition by proposing to replace it with other legal norms instead, then sooner or later it will succeed. However, if the government suddenly becomes weak, and consequently unable to force the transition to the new social norms, old practices can return. In such times of turmoil, the return to traditions is one of the largely illusory ways of restoring previous order. Moreover, during such periods of time "invention of tradition" can happen, such as in parts of Uganda where FGM was recently proclaimed as a return to African traditions (Lightfoot-Klein [1989]) or

[18]By modeling FGM as a Global Game in Section A I show how regime stability can affect cultural norms and tradition, while being in line with Efferson et al. [2015], Mackie [1996], Hernlund and Shell-Duncan [2007].

[19]Sociologists invented a special term for this phenomenon - after Emile Durkheim, they began to call it the *"anomie"*. Such a situation is extremely uncomfortable for the person: uncertainty dramatically increases the risks of interaction between people.

in Syria, Iraq[20] and Russian ethnic republic of *Dagestan*[21] it was proclaimed as a return to Muslim tradition.

Thus, adverse shocks in regime durability can lead to an increase in the persistence of traditional practices. Libyan Civil War wreaked havoc in the Magreb and Sub-Sahara African regions. In the time of unrest, colonel al-Gaddafi used his vast financial resources to train, arm, and fund large numbers of *Tuaregs* – semi-nomadic ethnic minority group[22]. When he died, the *Tuaregs* took the guns back out with them to Algeria, Mali, Niger and Burkina Faso where they took control of territory[23]. In Mali, they led a full-fledged rebellion that, for a time, seized the country's northern half. For example, A *Tuareg* group that call themselves *National Movement for the Liberation of Azawad*[24] were making military assault on the targets not only in Mali but also in Niger and Burkina Faso, and reached as far as Niamey in the South-western Niger. The terrorist organization *Al-Qaeda*[25] cells appeared as well using the political vacuum and capturing entire towns in Mali and Algeria. These events caused NGO to stop their activity in affected countries thus resulting in spikes in FGM cases in Mali and, Niger. Similar situation happened in northern Nigeria where due to *Boko Haram*[26] insurgency FGM prevalence in regions affected by terrorist activity increased significantly. Importantly, neither *Tuaregs*, nor *Boko Haram* followers do not practice FGM, thus having no direct effect on the tradition, but nevertheless, FGM prevalence spiked in those regions.

The same way as FGM reappear as a way to minimise uncertainty in case when national institutions fail (by not providing NGO opportunity to work) to provide FGM-free marriage market, in some cases people abandon state laws in favour of traditional or religious norms and tradition in case government cannot enforce them. Striking example of this fact had happened in Nigeria where northern half of the country started unofficially to use Sharia laws. Moreover, at some point those states officially were allowed to switch to Sharia while having predominantly Christian south to have secular laws (Alfano [2015]). Similar story happened in the Russian Northern Caucasus, where local traditional-Sharia mix of laws was imposed after the breakdown of Soviet Union (Lazarev [2012]).

Durability of regime is necessary but not sufficient condition that makes other mechanisms of abolishing of FGM or other traditional practices work and answers the question: why footbinding in China was abolished while persistence of ideologically similar FGM decreases only in some African countries despite the fact that methodology of anti FGM movement is the same?

Thus, what is the role of regime stability? If a stable regime is supporting anti-FGM campaigns, and NGOs consistently push the population to eradicate this harmful traditional practice, people can abandon it and do not circumcise their daughters. In this case, they believe that the policy against the tradition will continue even in the long run, long enough for their daughter to find a match on the marriage market without

[20] http://www.nydailynews.com/news/world/isis-militants-order-female-genital-mutilation-northern-iraq-u-n-article-1.1878745

[21] *http://philologist.livejournal.com/7402276.html*

[22] More information about this fact can be found here https://www.opendemocracy.net/hugh-brody/gaddafi-and-tuareg-lords-of-desert or here http://www.nytimes.com/2012/02/06/world/africa/tuaregs-use-qaddafis-arms-for-rebellion-in-mali.html?_r=0.

[23] *http://en.wikipedia.org/wiki/Tuareg_rebellion_(2012)*

[24] *http://en.wikipedia.org/wiki/National_Movement_for_the_Liberation_of_Azawad*

[25] *https://en.wikipedia.org/wiki/Al-Qaeda_in_the_Islamic_Maghreb*

[26] https://en.wikipedia.org/wiki/Boko_Haram

FGM, and thus they do not have to circumcise their girls now. Conversely, if a political regime is weak and unable to enforce the anti-FGM law and ensure constant presence of NGOs, people won't be persuaded that it will not last long enough for their daughters to grow up and find a husband without FGM, then in this scenario FGM will persist. It means that regime stability channel and necessary condition is NGO or governmental activity against FGM, and it affects decay of the tradition through peoples expectations about future activities of those NGOs.

It is important to note that currently, FGM is considered as a social coordination norm, and it determines the way that anti FGM campaigns are working. There are three ways that governments can fight against FGM. First is a legal prosecution for committing FGM in cases where such criminal legislation exists. This way is not efficient as state capacities are generally very low and FGM legislation is generally not enforced even if circumcision causes death (Rahman and Toubia [2000]). The second way is to educate women about the consequences of FGM and their rights through governmental nonprofit organizations or international NGOs or, rarely, through media or billboards (UNICEF et al. [2008], Unicef et al. [2007], UNI [2013]). The most popular way is to use governmental nonprofit organizations or international NGOs that are trying to commit as many people as possible in each village not to circumcise their daughters and promise to marry their sons only to non-circumcised girls (TOS [2013], DFI [2013], UU [2013]). Clearly, this approach is based on the collective action nature of FGM, and the goal of the NGO is to gather a critical mass of villagers to make a signal to all villagers, that if they will not circumcise their daughter they have good chances for a good marriage market outcome (Diop et al. [2004], Mackie and LeJeune [2009], UU [2013])[27].

The microfoundation behind this theory is the value of time. On the one hand, if agents value the future more or, alternatively, are sure that durability of the regime is high and the country will not descend into a civil war, the benefits in the long run should have more weight when they make decisions of not following the tradition[28]. On the other hand, if their valuation of the future is low or, alternatively, if they believe that the country's leadership is unstable, and adverse long-run shocks (e.g. income) can happen, they might be more interested in following the harmful tradition.

After all, FGM is a cultural norm, and even if changing some cultural norm is beneficial in the long run, it might be costly in the short term. For example, not binding feet of a daughter would be penalized by worse marriage market conditions for that young woman in the future, while this action makes the woman handicapped and permanently decreases quality of her life. It means that people that value the future more will be able to abandon such harmful traditions easier then those who value it less.

[27] As an example, I provide a story of "*Diagoubou* declaration" - the first multilateral announcement to renounce the practice of FGM in Senegal. Two Senegali villages *Malicounda Bambara* and *Nguerigne Bambara* decided to renounce the practice of FGM, although people continued to circumcise girls. That happened because the parents of girls who didn't undergo FGM found it impossible to find partners in nearby villages (Armoudian [2011]). To completely stop FGM, a local imam Demba Diawara together with an American NGO had to make a multilateral declaration by the 11 nearest villages to create a critical mass for the marriage market matching (TOS [2008]).

[28] For example, Chinese who were able to abolish footbinding in one generation demonstrate very high saving rate in comparison with citizens of countries practicing FGM. While both traditions are aimed to virtually the same marriage market outcomes, differences in value of future as well as average lifetime provides very clear evidence for my hypothesis.

2.2.2 Cases from the Factual Record

Some anecdotal evidences for this theory can be found in NGOs reports: not all participants of such public declaration programs by NGOs believe that no girl would be circumcised. For example, Diop et al. [2004] shows that 63% of people who had participated in a public commitment event felt the declaration would be respected, compared with 48% of non-participants, and Marcus and Page [2014] provide similar 57% and 44% numbers. At the same time NGOs are more efficient if they operate year by year in the same villages. According to Marcus and Page [2014], longer existing programs (e.g. *Tostan* and *Ishraq* that exist for 15 and 6-10 years in different locations) are more successful than shorter programs (e.g. *Ndukaku* in Nigeria).

Explanation of this fact and the reasoning of some informants, mostly women, can be found in UNICEF et al. [2008]:

> "...we were asked to abandon an age-old practice, and we accepted although we were never exposed to all the disadvantages everybody is talking about; so we should get something in return that offsets this great loss (loss of a milestone, loss of a recognition sign, loss of ethnic/cultural identity)".

Moreover, in the villages where public declarations of abolishing FGM happened several years before the interviews made by UNICEF et al. [2008] and FGM rates fall, the resentment remains strong as people were expecting more of a payback in their daily lives. It means that if people are sure that anti-FGM policy will last and NGOs will come back and reward them for abandoning FGM and continue to enforce marriage market without FGM through commitment, they will not circumcise their daughters. A recent study by Bicchieri and Marini [2015] also documents that FGM dynamics are strongly associated with social expectations.

There is also evidence that in those villages in Mali where public declarations were made, FGM shares decreased dramatically. However after a coup in 2012, women started to circumcise girls again[29]. As the article states: "*...side effects of the political turmoil that struck the country in 2012 and continues today, making government attempts and commitments by nonprofit groups to improve conditions for women a huge struggle*", thus corroborating the hypothesis that regime stability matters for people's expectations if anti-FGM policy will continue or not.

In Sierra Leone fighting against the FGM is taboo for the political elite, and due to unstable regime the government does not support any consistent anti-FGM policy[30]. FGM there is an initiation procedure for joining secret *Bondo society* that exists in every village and town and is a vital communications link between politicians and rural communities. If politicians will attack FGM too much, they might lose women's votes. There are more other anecdotal evidences that NGO activities in certain countries are not sustained due to political instability and weakening of the regime[31].

[29] http://passblue.com/2014/11/20/with-mali-in-political-turmoil-high-fgm-rates-persist/

[30] http://www.theguardian.com/global-development/2015/aug/24/sierra-leone-female-genital-mutilation-soweis-secret-societies-fe

[31] Some illustrative cases can be found in the following links: http://orchidproject.org/

By contrast, in Kenya consistent anti-FGM policy and constant allowance of the NGO to have access to the villages is considered as a "...signal that social norms are changing, bring the subject out into the open and give cover to parents or girls who don't want to go through it [undergone FGM]"[32].

To summarise the hypothesis about durability of political regime and my identification strategy, I present two graphs. On the left, I depict FGM prevalence of the *Akan* ethnic group, divided between Ghana and Cote d'Ivoire. Both groups start with similar FGM rates and same regime durability, however, starting from 1966, Ghana experiences a time of political unrest, while Cote d'Ivoire remains under stable authoritarian leadership. We can see, that difference in the FGM rates jump follow the shocks of regime durability, making FGM among *Akan* people in Ghana more prevalent in comparison with those *Akan* people who live in Cote d'Ivoire. Similar story can be seen in the FGM rates of *Fulani* - ethnic group divided between Burkina Faso and Guinea. Starting from almost the same FGM and regime durability measures, constant unrest in Burkina Faso is followed with the steady increase in FGM rates among *Fulani* people there, while durability shock in Guinea in 1995 caused FGM rates to grow faster than in Burkina Faso[33]. Both cases are examples, of how one ethnic group randomly divided by the state borders and having the same cultural norm change it over time due to changes in regime durability. Further identification concerns, will be covered in Sections 4 and 5. Overall, we there is a strong negative correlation of durability of the regime and fraction of women that had FGM out of all women eligible for FGM for all countries used in the paper (Figure C.2).

According to the hypothesis described above, we know that regime durability won't have a negative effect on FGM in all countries, but only for those where government has an anti-FGM policy. In the Figures C.3 and C.4 of Appendix C, I depicted similar correlations for those countries that currently fight against FGM. All of them demonstrate the same negative pattern[34]. The second group of countries (Figure C.5) was successful in eradication of FGM, and its prevalence is minimal in those countries: 4% for Ghana and Togo, 2% for Niger and 1% for Cameroon. Here we don't observe any distinguishable patterns. The last group of countries is those who do not have any consistent campaign against the FGM (Figure C.6). Mali and Sierra Leone do not have anti-FGM criminal legislation, while Egypt, Iraq[35], Somalia and Gambia imposed an FGM ban only in 2008, 2011, 2012 and 2015 respectively and I don't have the data for those years for those countries. In Figure C.6 we can see, that the relationship between regime durability and FGM is positive for Egypt, as instead of fighting with the regime it provided the opportunity to perform FGM in hospitals[36]. Graphs for Gambia and Mali do not seem to indicate any correlation, while graphs for other countries without anti-FGM legislation still have negative correlation.

wp-content/uploads/2013/02/Guinea-Bissau-Final.pdf http://www.newrepublic.com/article/world/96555/egypt-genital-mutilation-fgm-muslim-brotherhood.

[32] http://www.unfpa.org/news/taking-female-genital-mutilationcutting-out-cultural-mosaic-kenya

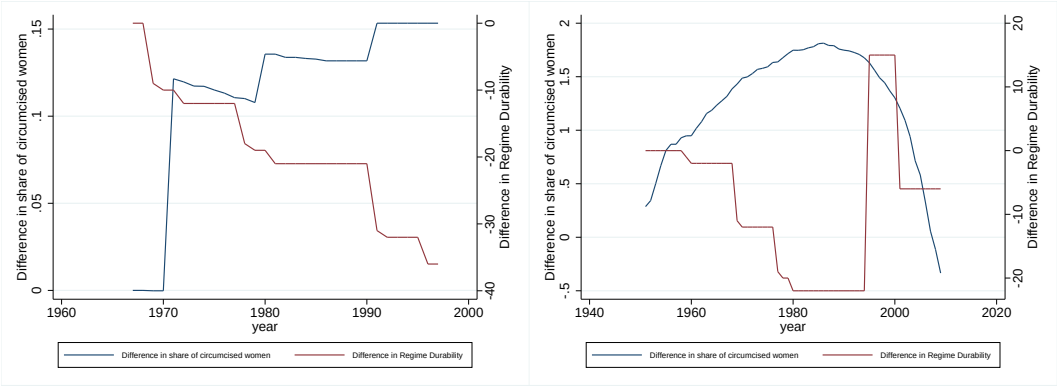
[33] This durability shock was caused by President Colonel Lansana Conté remaining in the power by getting a majority for his ruling party in the parliament, despite previous announcements that the country returns to civilian rule.

[34] Although, for Yemen there are two clouds showing similar correlation patterns between FGM rates and regime durability, but having different levels of FGM prevalence. They correspond to Southern and Northern Yemen.

[35] The share of FGM prevalence in Iraq is small, only 8%, but the tradition is practiced by *Kurds* (for whom share is 72%), not *Arabs*, and Arabic governments didn't have any positions about it until the end Saddam Hussein's regime.

[36] More about medicalisation of FGM can be found here Shell-Duncan [2001].

Figure 2.1: Differences in FGM Rates and Regime Durability for *Akan* and *Fulfilde* ethnic group



Notes: *Akan* ethnic group partitioned between Ghana and Cote d'Ivoire. *Fulfilde* ethnic group partitioned between Burkina Faso and Guinea. Source: FGM rates: DHS; Regime Durability: Polity IV project.

Concluding this Section, FGM is an explored cultural norm that appeared as an important mechanism of the marriage market. The ways of abolishing it are known as well, but they do not work in all cases, thus providing room for further analysis. Finally, there is evidence that stability of the regime has an effect on persistence of FGM, as shown by countries with more durable regimes having lower rates of FGM. In the Appendix A I build a model of abolishing traditional practices to justify structural form of the empirical specifications that will be proposed in Section 4.

3 Data

In this section, I briefly describe how each of the main datasets was constructed, beginning with the individual level surveys. Further details are available in Appendix C.3.

The main source of data for this research is the set of surveys by Demographic and Health Survey (DHS)[37] and Multiple Indicator Cluster Survey (MICS)[38] program. I used 55 surveys[39] (see Table 10) with the question about the age of circumcision out of more than 70 surveys that contained "Female Genital Cutting" questionnaire. Both DHS and MICS are very similar and consistent both in variables and methods of data collection, thus making them comparable.

Survey data include the following information: if woman is circumcised, age, age of circumcision, marital status, age of marriage, years of education, ethnicity and religion (of the respondent for DHS and of the household head for the MICS datasets), country and region, and area of residency (rural\urban status). The response rate ranges from 80 to 99 percent. On the map C.1, I depicted average shares of circumcised women averaged over all surveys used in the paper. Summary statistics of these samples are presented in Table 12.

[37] `http://www.dhsprogram.com/data/`

[38] `http://mics.unicef.org/`

[39] There are 58 surveys for 23 countries, from one to five surveys per country. The access for three surveys (Yemen 1997, Eritrea 1995 and Eritrea 2002) is restricted and was not used for this paper.

One of the most important concepts used in this paper is the "age of circumcision". Even if FGM has some social norm in the society, the timing at which the girl is circumcised can vary significantly[40]. Such differences exist as the age of FGM depends on ethnic and regional cultural traditions and religion denomination (Karanja [2003], Yoder et al. [2004], UNI [2013]). Based on the "age of circumcision" variable ($fgm \quad age_{ierd}$) for each region r, ethnicity e and religion d, I calculated "eligible age for circumcision" ($eligible_{erd}$) by taking the range of years between minimum and maximum "age of circumcision" for each ethnicity, religion and region:

$$eligible_{erd} \in [\min(fgm \quad age_{ierd}), \max(fgm \quad age_{ierd})] \tag{3.1}$$

For computational sake and simplicity I drop all observations for women whose circumcision age is above 25 years (which is 0.06% of the sample). All results are robust to calculating eligible age of circumcision without taking religion (d) into account ($eligible_{er} \in [\min(fgm \quad age_{ier}), \max(fgm \quad age_{ier})]$) or by using country ($c$) instead of region ($r$) ($eligible_{ec} \in [\min(fgm \quad age_{iec}), \max(fgm \quad age_{iec})]$).

By using variables containing information about year of birth, age of circumcision and marriage I construct a retrospective person-year panel similar to Collin and Talbot [2016], and keep only those years of womens life when they are eligible for circumcision. I drop all observations for already circumcised women, as circumcision is an absorbing state and can be done only once.

The main dependent variable is a percent share of women who were circumcised (fgm_{cet}) at year t in country c of ethnicity e. It is constructed as a fraction of all women who were cut (fgm_{icet}) during year t in country c of ethnicity e divided by the number of women who were eligible for circumcision due to age ($age_{iect} \in eligible_{iec}$). Thus the variable of interest can be written as follows:

$$fgm_{cet} = \frac{\sum_{i=1}^{N_{iert}} \mathbb{I}(fgm_{icet} = 1)}{N_{iect}} \times 100, \tag{3.2}$$

where N_{iert} is a number of eligible for circumcision women such as $age_{iert} \in eligible_{er}$[41].

As for the country-year specific variables, data by Polity IV project were used (Project [2013]), as well as PennTables 8.1 (Feenstra et al. [2015]) and World Bank's World Development Indicators[42]. Data about anti-FGM legislation is taken from Rahman and Toubia [2000] and UNI [2013]. I assume that anti-FGM legislation exists if there is a criminal law that openly states the real punishment for conducting any type of FGM.

The main variable of interest is the political regime durability. As a primary measure of regime durability I use variable DURABLE by Polity IV, that shows the number of years (cumulative) since the last substantive

[40] To make it more clear, in the Figure C.7 I provide cumulative distribution of FGM age – example of two ethnicities: For the first one (*Akan*), eligible age of FGM is within the range from 5 to 18 years; for the second (*Guerze*) - from 1 to 30. Most of the ethnicities have eligible age of 0-18. In addition, I plot the hazard and survival functions for my sample of circumcised females and present density of age of FGM, and cumulative distribution of the age when FGM was performed (C.8).

[41] Later for some specifications with regional level of aggregation I use regional level dependent variable fgm_{ret}, where I use countries regions r instead of countries$c$.

[42] `http://data.worldbank.org/data-catalog/world-development-indicators`

change in authority characteristics (defined as a 3-point change in the POLITY score). Thus a variable $Durability_{ct}$ that is equal to DURABLE assuming that the regime stability is a martingale, and the best predictor of future regime stability is the regime durability now. This is consistent with scholars' views on durability of political regime (Clemens and Cook [1999], Gates et al. [2006]). Scholars agree that the best predictor of the future regime durability is previous regime durability (Gasiorowski [1995]) and it is often used in the economic (Girma and Shortland [2008]) and political science literature (Li [2005], Piazza [2007, 2008])[43]. Alternative ways to measure regime durability can be found in Section 4.4 where I use other possible measures of regime durability to show that my results are robust and I do indeed capture the effect of regime stability.

All this leads us to the next chapter, wherein I describe empirical specifications and identification assumptions used to test the hypothesis of regime durability.

4 Empirical Specifications and Results

In this section, I consider main empirical specification, identification strategy and the main results[44]. I test the hypothesis that differences in countrywide regime stability across the national border explain within-ethnicity differences in FGM rates, such as more stable regimes have lower FGM prevalence.

4.1 Empirical Specification

I use aggregated to country-ethnicity level data:

$$fgm_{ect} = \alpha + \delta Durability_{ct} + \Pi X_{ect} + \Psi \Gamma_{ct} + \mu_{ec} + \lambda_t + \epsilon_{ect}, \tag{4.1}$$

where, fgm_{ect} is the number of women who were cut divided by the number of women eligible for FGM of ethnicity e in country c in year t. The variable $Durability_{ct}$ is a regime durability of country c in year t. Matrix X_{ect} represents the set of averaged by ethnicity and country individual-level variables: age, education, opinion about FGM, and matrix Γ_{ct} contains the set of country-year specific variables, such as GDP per capita, population, unemployment, institutional variables. Finally, μ_{ec} is a country-ethnicity fixed effect, and λ_t represents time fixed effects. Because the main variable of interest varies at the country-year level, I cluster standard errors on the country level in order to be more conservative.

[43] Most of the critique of the POLITY score is based on the fact that it is a subjective measure of democracy. In this case the DURABLE can measure a perception of regime durability. However, it is even better for our cause as we are more interested in peoples' expectations about regime durability.

[44] The main empirical specification is derived from the model described in the Appendix A, where I develop a simple model of abolishment of a harmful tradition based on the global game approach, proposed by Morris and Shin [1998, 2003]. I assume that decision of each particular household depends on the actions of other households in the community, however, it also depends on uncertainty of what other households will do. I show that common signal about regime stability has positive effect on the share of people that will choose not to circumcise their daughters through affecting beliefs about fundamentals (expectation of the future in our case).

Hypothesis 1. *Regime durability has negative effect on FGM ($\delta < 0$).*

4.2 Identification

In this subsection I offer an evidence of the plausibility of the identification assumptions. This analysis is possible due to the quasi-experimental setting when contemporary boundaries of the African countries were artificially drawn by the European countries in the mid- to late XIX century. Ethnicities divided by countries' boundaries have similar cultural norms, anthropological traits and natural environment, while at the same time are subject to different formal institutions. In comparison with Michalopoulos and Papaioannou [2014] that use the same identification strategy to study effect of the institution on economic outcomes, I can not use historical ethnic maps to identify ethnic homelands because of the nature of the dependent variable. However, I use rich individual survey data that contain information about ethnic group of the respondents as well as data about FGM prevalence. In addition my approach explores time variation in formal institutions and regime durability in particular.

Thus ethnic groups that span more than one country allow us to identify the effect of regime durability, while ethnic groups that are unique only to one country contribute to the decrease of variance and higher explanatory power[45]. By using fixed effects for ethnicities and countries' regions I can consider regime durability as a continuous treatment for the divided ethnic\religious group[46]. As was shown in Michalopoulos and Papaioannou [2014], institutions do not have an effect on economic performance within ethnicity, thus we don't need to disentangle the direct effect of institutions on within-ethnicity FGM persistence and indirect effect through economic factors.

The least problematic assumption is about the absence of reverse causality. It is absolutely clear, that FGM of an individual person will not have any effect on the durability of the country's political regime. Similarly, the share of women circumcised in a certain year does not have an effect on the regime durability in the same year (while lagged FGM share might have effect on current regime durability through economic underdevelopment). In addition, the migration factor can be ignored as FGM is predicted by the current location of habitat and not by birthplace of women or their parents, since it is the local marriage market that dictates the type and necessity for FGM (Gallo and Abdisamed [1985]).

Another possible problem might happen due to omitted variable bias. In specification 4.1 I use country/region, ethnicity and year fixed effects and an array of control variables to take into account unobserved heterogeneity. Nevertheless, some omitted variables can still correlate with $Durability_{ct}$. For example, income or inequality might be correlated with regime stability because richer countries are more stable, while higher inequality might lead to political unrest. To take this into account I add log of GDP per capita as a control variable, while inequality is taken into account through region fixed effects. In cases where more populated countries have more volatile political regimes, I control for the country total population.

[45] It is important to note, that ethnicity explains up to 55% of the variation in FGM prevalence.

[46] To be more conservative, in some specification I use countries' regions fixed effects than just country fixed effects. In addition, I use specification with fixed effects for ethnicity dyads.

Probably, the most important source of unobserved heterogeneity is due to the state capacity to enforce anti-FGM law imposed by the government[47]. To take this into account, I use proxies for the state capacity such as severity of terrorist attacks as a dummy for in-turmoil regimes and dummy for years with anti-FGM legislation in certain countries. Moreover, I add indicator of the democratic regime and its interaction with the regime durability in case the effect differs between democratic and autocratic regimes.

In case regime durability depends on the heterogeneity of population, I control for the shares of religion groups in each region. In addition to the controls mentioned above, I add some other variables that I expect to be important determinants of the FGM shares, such as size of the marriage market, share of polygamist families, public opinion about FGM, average total years of women's education, and share of rural area population.

As in the case of autocorrelation of the dependent variable it might be important to control on the lagged dependent variable in the right hand side of equation 4.1. However, if lagged dependent variable is correlated with the unobserved panel-level effects my estimates will be inconsistent. The logical choice to alleviate this concern is to use Blundell-Bond estimator (Blundell and Bond [1998])[48].

Exploiting individual level data I am able to take into account different values of regime stability through womens' lifetime. I provide empirical specification aiming to identify the probability that a woman will be cut due to changes in regime durability. I estimate Cox proportional hazard model, where the length of time before the "failure event" (FGM in this specification) is considered in the estimation using a baseline hazard function. It uses individual level data that is organized in person-year panel data. As FGM is permanent, we can consider women's states of the world as a Markov chain, where "no FGM" is a transitional state, and "FGM" is an absorbing state[49]. The duration of interest for each woman i is the time between t_0, when she becomes eligible for circumcision and t_T the age when she has either undergone circumcision or become ineligible due to age. In this case, if a woman was not circumcised, she contributed $t_T - t_0$ number of observations, while if she was circumcised at year s, there will be $s - t_0$ observations for her.

For individual level specification in addition to region, ethnicity and religion fixed effects and time trend, thanks to the thorough questionnaire there are a bunch of variables that can take into account unobserved heterogeneity[50]. In order to control for the variables that might correlate with regime durability in addition to the controls for the baseline specification 4.1, I add dummies for households assets, such as land, or type of roof and floor[51]. These variables should catch effects of institutions and regime stability through possible

[47]One way to take this into account is to use State Fragility Index by Polity IV or Mo Ibrahim Index of African Governance by Mo Ibrahim Foundation, however they are available only since 1995 and 2000 correspondingly thus dramatically decreasing variation in the main variable of interest.

[48]For this I assume that that there are no autocorrelations in the idiosyncratic errors, and that the panel-level effects are uncorrelated with the first difference of the first observation of the dependent variable (fgm_{ect}).

[49]Similar approach is implemented in studies about male circumcision (Venkataramani and Maughan-Brown [2013]), death\terminal cancer (Honoré and Lleras-Muney [2006]) or HIV (Burke et al. [2015]).

[50]Thus for example, using the same data Bellemare et al. [2015] don't use any identification methods, by claiming that the large number of control variables is enough to take into account unobserved heterogeneity.

[51]As I use person-year panel data constructed from the surveys that gives a snapshot of the household's information in a given year but not years of life of women when they were eligible for circumcision, usage of wealth index at the time of the survey can be misleading. At the same time, such assets as land or house are often hereditary and thus contain less measurement error as they do not change much over time. As a robustness check, I use Wealth Index based on the assets data from survey. The index

land ownership legislation or assets expropriation.

Clearly, usage of the individual level data will suffer from serial correlation due to the nature of FGM tradition. Because observations are likely to be temporally correlated due to duration dependence or possible nonlinearity of the trend, the use of traditional techniques poses problems. To address this, following Beck et al. [1998] I include, in all individual level estimations, a natural cubic spline function of the number of years a female has been without FGM.

In order to better control for the unobservable heterogeneity of individual data, I present an alternative estimation method using conditional logit estimation (Chamberlain [1980]). Conditional logit can provide unbiased estimates of the parameters, but only for the sub-sample of individuals that were cut during the observed period of time.

Another possible problem can be due to the measurement error. The data is clearly not perfect; despite the high response rate, answers of respondents might be unintentionally incorrect[52]. Approximately, 7.8% of women didn't answer about their FGM status or age of circumcision. In this case I might have a measurement error in the dependent variable. However, assuming classical measurement error this will only increase the variance without influencing the consistency of interest coefficients[53].

As the data is self reported, one can say that some women's answers may be untruthful. If this is indeed the case, we might expect that if FGM is forbidden in a particular country then women who have undergone FGM might claim that they haven't. In this case, my estimates will be downward biased and I will again underestimate the effect of regime durability. In case if women under-reported their FGM status only if the regime is stable, results might be indeed biased. Nevertheless, the majority of respondent underwent FGM in childhood by their parents choice. Thus we can assume that women do not lie about what had happened at that time[54].

In addition, there are concerns about my measure of regime stability ($Durability_{ct}$). First, it can measure not perception of people about how stable political regime is, but something else. Second, as $Durability_{ct}$ is a proxy for peoples perception of regime stability and continuation of anti-FGM campaign, it will result in attenuation bias. Finally, Polity IV measure of regime durability does not take into account coups d'état, national leader's personality, wars an civil conflicts, type of autocracies: for example change of dictator with completely different political agenda but similar in the degree of political freedoms can have no effect on $Durability_{ct}$. These facts will result in constant overestimation of regime durability and as a result will also contribute to the attenuation bias. Evidences that $Durability_{ct}$ indeed measures perception of people about how stable political regime is and construction of the new measure of regime stability that take into account

is computed in two stages. On the first step, I estimate prices using item-response model developed in Ananyev and Poyker [2015], and on the second step, calculate weighted average of assets for every household using estimated prices as weights.

[52]For example in the Appendix C.8 we can see the age of the respondents: clearly, peaks on 20, 25, 30, 35 and 40 are explained by fact that women do not remember their age.

[53]To back this assumption, I create a dummy variable $Missing_i$ (equal to 1 if data is missing, and equal to 0 if not) and regress it on the treatment variable. Regime durability has no significant effect on the $Missing_i$, and I eliminated those observations from the dataset. The fact that some observations for women with FGM who don't remember their circumcision age are dropped will bias my results against finding evidence of the effect of regime stability on FGM prevalence.

[54]At the same time, questions about circumcision of daughters can indeed by biased as women can potentially under-report FGM cases if regime is stable (Jackson et al. [2003]).

two other concerns are presented in the Section 4.4.

Finally, I confirm, that the mechanism of how regime stability have an effect on FGM works only through people's expectations throw several tests. First, to be sure, that this is not the effect of NGO activity in the region I control for the number of NGOs (NGO data is only available for half of the years in the panel), and total amount of foreign aid that each country receives each year. Second, I provide additional robustness checks, concerning NGO in the Section 4.5. Finally, in the Section 5.2 I use cross sections of the surveys that have a question about intention to circumcise a daughter. In this case, regime stability should have negative effect on the decision about daughter circumcision, that reflects peoples expectations if anti-FGM policy will be maintained in the nearest future.

In the next section, I shown that regime durability has effect on the FGM prevalence, such as more stable regimes get rid of the harmful traditions faster then less stable. Moreover, regime durability affect cultural norms through expectations of future: e.g. that government or NGO will return and continue to enforce commitment not to circumcise daughters.

4.3 Results

Estimation results are presented in Table 1. Column I shows two-way fixed effect estimation on the full sample of countries. The key variable of interest is regime durability ($Durability_{ct}$). It is highly negatively significant[55]. It can be interpreted as follows: political regime, lasting for 10 years (one standard deviation of regime durability is equal to 10.23), leads to a moderate decrease of the share of circumcised women eligible for this by age (fgm_{ect}) on 18.8% of its mean or 8.2% of its standard deviation[56]. Because observations are not independent due to aggregation, following Cameron et al. [2006], I correct for this by two-way clustering standard errors at the country-ethnicity level and present them in the square brackets[57].

In order to control for political regime I add a measure of democracy ($Democracy_{ct}$) in Column II as it can be an important omitted variable, correlated with regime stability. The results for regime durability change insignificantly; democracy has negative while insignificant effect on the FGM share. In order to check whether the effect of the key variable has different effects in democracies and autocracies, I add interaction term ($Durability_{ct} \times Democracy_{ct}$) to catch effect of durability for democracies. Results are presented in Column III where both $Durability_{ct}$ and interaction of $Durability_{ct}$ and $Democracy_{ct}$ are negative. The variable $Durability_{ct}$ can be interpreted as the effect of change in durability for autocracy, while the interaction term adds the effect of change in durability for democratic countries. Thus collapse of a 10 year regime leads to an increase of 16.1% of mean or 7.0% of standard deviation of the share of circumcised women

[55] Adding a squared term for regime durability doesn't result in any significant change, $Durability_{ct}$ is still negatively significant while the squared term is negative but not significant. Similarly, I do not use log of $Durability_{ct}$ because it has many zero values and for the sake of easier interpretation of the results. Nevertheless, if I use $\ln(1 + Durability_{ct})$ as a dependent variable, all results hold.

[56] As I only have 23 countries, my standard errors may be incorrect (Angrist and Pischke [2008]). Albeit, according to Hansen [2007] even 10 clusters should be enough. To completely alleviate this concern, following Cameron et al. [2008] I employ wild bootstrapping of the standard errors: the coefficient is still significant with p-value = 0.034.

[57] In addition I cluster standard errors at the country-ethnicity, country-decade and two-way country-decade level, but standard errors are smaller than those clustered at the country level, and I do not report them.

for nondemocratic countries. While the same collapse of a democratic government is 4.3 times bigger, while insignificant on a coumtry level clusterisation.[58]. The coefficient for $Democracy_{ct}$ changed sign and become positive, indicating that only durable democracy contributes to the eradication of the practice of FGM, not democracy per se. As democratic regimes depend more on the desires of politicians to be reelected they might be reluctant to impose not-popular for some ethnic groups anti-FGM legislature, thus being positively associated with FGM rates. Both $Durability_{ct}$ and interaction of $Durability_{ct}$ and $Democracy_{ct}$ coefficients even if not significant in this very conservative specification due to small number of clusters are highly significant with country-ethnicity or country-decade clusterisation of errors, thus indicating, that the effect is still nonzero[59]. Column IV where as a robustness check I employ ethnicity and country fixed effects instead of country-ethnicity effects show similar results are similar to those in previous columns.

Table 1: Impact of Regime Durability on FGM

	I	III	III	IV	V	VI
VARIABLES	Dependent Variable: Share of Circumcised Women					
$Durability_{ct}$	-0.0630***	-0.0681***	-0.0583**	-0.0628**	-0.0479*	-0.0611**
	(0.0213)	(0.0222)	(0.0243)	(0.0227)	(0.0234)	(0.0275)
	[0.0225]	[0.0234]	[0.0261]	[0.0264]	[0.0268]	[0.0275]
$Democracy_{ct}$		-0.347	0.340	0.165	1.067	1.318
		(1.130)	(1.096)	(0.998)	(1.30)	(1.240)
		[1.191]	[1.225]	[1.151]	[1.463]	[1.241]
$Durability_{ct} \times$			-0.196	-0.190	-0.269	-0.280
$Democracy_{ct}$			(0.210)	(0.220)	(0.348)	(0.315)
			[0.217]	[0.241]	[0.351]	[0.315]
Controls	✓	✓	✓	✓	✓	✓
Fixed effects	Country-Ethnicity	Country-Ethnicity	Country-Ethnicity	Ethnicity & Country	Country-Ethnicity	Ethnicity & Country
Year Fixed effects	✓	✓	✓	✓	✓	✓
Aggregation level	Country-Ethnicity	Country-Ethnicity	Country-Ethnicity	Country-Ethnicity	Region-Ethnicity	Region-Ethnicity
Observations	4,476	4,462	4,462	4,462	29,492	29,492
R-squared	0.431	0.431	0.432	0.390	0.409	0.185

Notes: All regression contain constant. Columns I-III are estimated using country-ethnicity and time fixed effects. Columns IV is estimated using ethnicity, country and time fixed effects. . Columns V is estimated using region-ethnicity and time fixed effects. Columns VI is estimated using ethnicity, region and time fixed effects. The following variables are used as controls: constant, public opinion about FGM, education, age, size of a marriage market, rural area dummy, log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid. Robust clustered by country standard errors in round parentheses. Robust two-way clustered by country and ethnicity standard errors in square parentheses. *** p<0.01, ** p<0.05, * p<0.1

In Column V I exploit the fact that surveys are representative up to the regional level and aggregate all individual level data to the regional-ethnicity level. This approach provides an opportunity to use more conservative fixed effects, as region-ethnicity is a subset of country-ethnicity fixed effects, and bigger sample

[58] Adding interaction terms of $Durability_{ct}$ with all other control variables jointly does not change the main result. Only interaction of education and polygamy variables are marginally (on 10%) significant (negative). However, adding these interaction one by one or together make them insignificant.

[59] Marginal effects of $Durability_{ct}$ conditional on $Democracy_{ct}$ are presented in the Figure C.9.

size should decrease standard errors. On the other hand the variable of interest varies on the country level, thus I still cluster standard errors on the country-ethnicity level. In addition, there are several cases when number of individuals within region-ethnicity group is small, thus making bigger noise in the dependent variable. Results are consistent with previous columns, such as collapse of a 10 year regime leads to increase of 13.2% of mean or 5.8% of standard deviation of the share of circumcised women for nondemocratic countries. Similarly to Column IV, in Column VI I use ethnicity and country fixed effects and show that results remain unchanged.

It is important to note that all controls have expected signs and do not contradict the existing hypotheses of FGM persistence. Thus coefficients of population and size of the marriage market have negative sign (while insignificant for the size of the marriage market). Both variables are proxies for the size of the marriage market, and we expect them to be negative, as if the market is large there are more chances for women without FGM to find a husband. At the same time, average age of eligibility for circumcision of women is positive and significant, meaning that closer to marriage age, FGM is more plausible. These results corroborate all hypotheses described in Mackie [1996]. Also, education and GDP per capita have negative effects on FGM share, supporting the "modern values" hypothesis. Thus when becoming wealthier and more educated, FGM disappears, e.g. because of the greater women's rights or understanding of how barbaric this tradition is. Dummy for the share of rural population is positive (while insignificant), being in line with Kennedy [1970] "urban values" hypothesis and observations by UNI [2013]. The coefficients for terrorist activity and democracy have positive sign, while only significant (on 10% level) in one specification. Probably the most intriguing results are those of religion controls. The only significant (negative) coefficient is for share of protestant population. The coefficient on share of the Muslim population is negative, while insignificant[60]. Surprisingly, the number of NGOs and NGOs budget are not significant, as well as their interactions with $Durability_{ct}$. However, this can be explain with the fact, that NGOs are responsible to numerous programs, not only related to the eradication of FGM, and as I cannot control for the type of NGO's activity, measurement error drives the estimate toward zero.

To alleviate unobserved heterogeneity concerns, I propose an instrumental variable estimation. A logical choice is to use regime durability in a previous year to predict current $Durability_{ct}$ and show that predicted variables are still negatively associated with the share of circumcised women. However, if FGM share is autocorrelated I might still have endogeniety problems. To alleviate this concern I use Blundell-Bond estimation. Results for country-ethnicity and region ethnicity level of aggregation are shown in Column I and II of the Table 2 and are consistent with other estimates.

In column VI and VII, I exploit individual level data. First, for the sake of tradition, I show linear probability model and probit in Columns III and IV. Results, while consistent with previous results are not accurate due to obvious autocorrelation of the observation for the same woman in different years of her life[61].

[60] Coefficients of the control variables are available upon request. Adding cumulative share of FGM in order to control for the FGM prevalence does not change results in any aggregate-level specification, moreover, it is not significant. I do not include it in the set of control presented in the Table 1 in order to evade possible problems in estimation of the dynamic panel in Table 2.

[61] Coefficient for $Durability_{ct}$ become insignificant for LPM, as more than 96% of all observations of the dependent variable are zeros.

Second, I present Cox duration model in the Column VI. Durability of the regime and the interaction term of democracy and regime durability are both negative and significant, thus corroborating hypothesis 1. Thus, a 10 years old autocratic regime $Durability_{ct}$ leads to 3.5% decrease in probability of women being cut in a given year of woman's life. Finally, I address the issue of unobservable heterogeneity using the conditional likelihood function (Column VI), thus limiting the sample switchers and dramatically reducing the number of observations. The odds ratio for $Durability_{ct}$ are below unity and statistically significant, and one year increase in regime durability lead to 26.8% increase in the odds of being circumcised during the lifetime.

Table 2: Impact of Regime Durability on FGM: Continuation

	I	II	III	IV	V	VI
VARIABLES	Dependent Variable: Share of Circumcised Women		Dependent Variable: Dummy if Women is Circumcised in a Given Year			
	Blundell-Bond	Blundell-Bond	OLS	Probit	Cox P-H-M	Conditional Logit
$Durability_{ct}$	-0.0621**	-0.0695***	-0.0002	-0.00014**	-0.0035**	0.732***
	(0.0242)	(0.000405)	(0.00013)	(0.00007)	(0.0016)	(0.019)
$Democracy_{ct}$	1.730	0.564***	0.0052	0.0036	-0.102	0.226**
	(1.244)	(0.0190)	(.00711)	(0.0038)	(0.0805)	(0.146)
fgm_{ert} L1	.011457	-0.0619132***				
	.0568264	.0001417				
$Durability_{ct}$L1	.0104132	-0.0592329***				
	(0.0122985)	(0.0003298)				
Country level controls	✓	✓	✓	✓	✓	✓
Individual level controls	✓	✓	✓	✓	✓	×
Fixed effects	✓	✓	✓	✓	✓	×
Sample	All	All	All	All	All	All Switchers
Aggregation level	Country-Ethnicity	Region-Ethnicity	Individual	Individual	Individual	Individual
Observations	4,428	27,899	3,573,575	3,569,811	3,388,649	990,323
R-squared			0.072	0.191		0.927

Notes: All regression contain constant. I use country-ethnicity and time fixed effects in Columns I and region-ethnicity and year fixed effects in Column II. Columns I and II are estimated using two-step Blundell-Bond Dynamic Panel estimation. Lagged differences of $fgm_{ert}$and $Durability_{ct}$ are taken as instruments. The following variables are used as controls: constant, public opinion about FGM, education, age, size of a marriage market, rural area dummy, log of GDP per capita, log of population, shares of religions, number of active NGOs, budget of active NGOs, log of foreign aid. In addition, fgm_{ert} L2,$Durability_{ct}$ L2, are used as controls in Columns I and II. Column III is estimated by OLS. Column IV is estimated by probit and reports marginal effects. Column VI is estimated using Cox proportional Hazard model and contain marginal effects. Column VII is estimated using conditional logit and contain odds ratios. Robust GMM standard errors in parentheses for Columns I and II. Robust clustered by sample standard errors in parentheses for Columns III-VI. *** p<0.01, ** p<0.05, * p<0.1

Taken together, I documented that regime stability exhibits strong negative correlation with FGM rates, thus being consistent with the hypothesis. While quasi-natural experiment of countries borders partition allows us to rule out most of the endogeneity issues, one can raise a concern about plausible measurement error or unobserved heterogeneity in national institutions that affect both FGM prevalence and regime stability. For example, existence of governmental health programs or NGO activities can be attributed to a stable political regime and lower FGM rates. Alternatively, higher state capacity can be associated with more stable regimes and lower FGM rates. In the nest section, first, I use alternative measures of regime stability

in order to check robustness of the results and construct a forward-looking measure of regime durability that is better represent peoples expectation about how durable the political regime is. Second, I show that my results are robust to exclusion of certain countries out of the sample and not driven by other heterogeneity. Third, I show that regime stability has no effect on health related outcomes that can be caused by health programs or NGO activities. Finally, I use selection on observables to elicit the likelihood that the effect of regime stability is driven by unobservable country level heterogeneity.

4.4 Alternative Measures of Regime Durability

In this section I try alternative measures of the key variables. For this purpose I re-estimate Specification 4.1 by using alternative measures of regime durability. As regime durability by Polity IV shows the number of years (cumulative) since the last substantive change in authority characteristics (defined as a 3-point change in the POLITY score), the logical way to create alternative measure of durability is to use alternative POLITY score. This might be important since POLITY score is a subjective measure of democracy. For example, instead of measuring change in democracy, I can measure a change in perception of democracy, that will result in incorrectly measured Durability of the Regime. I use Przeworsky Democracy Index (PDI) (Cheibub et al. [2010], Przeworski et al. [2000]), Freedom House Polity Index (FHPI) (House [2013]), data by Geddes et al. [2014] (GWF) and X-POLITY score by Vreeland [2008] as alternative measures of POLITY score. More information about construction of the durability measure based on these indexes can be found in Appendix C.3.

In addition to the usage of regime durability based on the changes in each of POLITY score, PDI, FHPI and GWF, I use principal component analysis and extract the first principal component of the four durability measures based on those indexes. Then, I compute regime durability, based on this first principal component of the democracy scores. Results of the baseline regression 4.1 for all alternative measures of regime durability are shown in Columns II-VI of Table 3 and are similar in terms of signs and magnitudes to those of the baseline specification that I repeat in Column I for comparison[62].

Nevertheless, there might be a concern that cumulative number of years is just not a very precise proxy for people's expectation about how durable the regime is. Let's assume, that there are two dictators who are in power for 30 years and the first is 80 years old, while the second is 55 years old. Most probably citizens will evaluate durability of the regime in the country with younger leader higher then durability in the country with older leader. To answer this and other possible concerns caused by unobserved factors that can influence peoples perception of regime durability I construct an index of perception of regime durability.

$$length_{ct} = \alpha + \beta Durablility_{ct} + \gamma X_{ct} + \mu_c + \lambda_t + u_{ct}, \tag{4.2}$$

[62]Coefficients in Column VI can not be directly comparable to Column I, as the main variable of interest is a first principle component of regime durability, however, for the robustness we just need it to be negative and significant. I do not use durability measure based on X-POLITY score when compute principal components as it is highly correlated with POLITY score, however, if I use it the results hold.

where $length_{ct}$ is a number of years that political regime existing at time t in country c lasted after the last 3-point change in the POLITY score[63]; X_{ct} is a set of country level controls, such as gender, age and squared age of a leader, dummy for the type of political regime, GDP, population, etc.; μ_c and λ_t are country and year fixed effects. The results for several specifications of the regression 4.2 are presented in Table 13. I use specification in Column IV (with higher adjusted R^2) to compute Index of Regime Durability Perception (IRDP) – measure of expectation of how long particular regime will last: $IRDP_{ct} = \widehat{length_{ct}}$.

Results of the baseline regression 4.1 with IRDP is shown in Column VII. The coefficient is 26.9% bigger in magnitude than that of the coefficient of baseline regime durability measure in Column I, which is consistent with the attenuation bias caused by measurement error concerns: decrease in one standard deviation in regime durability increases the share of circumcised women by 28.5% of its mean or by 12.5% of its standard deviation[64].

Table 3: Alternative Measures of Regime Durability

	I	II	III	IV	V	VI	VII
VARIABLES	Dependent Variable: Share of Circumcised Women						
Measure of durability	Polity	PDI	Xpolity	FHPI	GWF	PCA	IRDP
$Durability_{ct}$	-0.0583**	-0.0459**	-0.0574*	-0.0617***	-0.0411*	-0.251**	-0.0740***
	(0.0243)	(0.0216)	(0.0315)	(0.0198)	(0.0208)	(0.119)	(0.0238)
$Democracy_{ct}$	0.340	1.414	0.860	0.282	0.788	-2.746	-0.806
	(1.096)	(1.553)	(1.151)	(1.532)	(1.381)	(2.884)	(1.355)
$Durability_{ct} \times$	-0.196	-0.240	-0.212	-0.0225	-0.207	-1.918	-0.0531
$Democracy_{ct}$	(0.210)	(0.254)	(0.184)	(0.0630)	(0.241)	(1.470)	(0.149)
Controls and Fixed Effects	✓	✓	✓	✓	✓	✓	✓
Observations	4,462	3,597	4,462	3,597	3,597	3,597	4,445
R-squared	0.432	0.455	0.431	0.454	0.454	0.456	0.432

Notes: Robust two-way clustered by country-ethnicity standard errors in parentheses. The following variables are used as controls: constant, public opinion about FGM, education, age, size of a marriage market, rural area dummy, log of GDP per capita, log of population, shares of religions. Results hold for regional level of aggregation and usage of fixed effects on ethnicity dyads. *** p<0.01, ** p<0.05, * p<0.1

4.5 Robustness Checks

In this section I will address additional robustness checks to corroborate my results in Section 4 that regime stability has a causal effect on persistence and decay of traditional practices.

First, in Table 4 I show that the results are not driven by some statistical artifact in some countries. Column I contains results of the same regression specification as Column III in Table 1 and is provided for comparison. To show that results are not driven by countries outside the African continent, I drop Iraq and

[63] $length_{ct} = \max\left(Durability_{c,t-s_0}; Durability_{c,t+s'}\right)$ $t \in \{s_0, .., s'\}$ with such s_0 and s' that $Durability_{c,t-s} = Durability_{c,t+s'} = 0$. All political regimes that still exist (and thus we don't know when they end) are dropped from the sample.

[64] To be more conservative in the following robustness sections I use Polity IV measure of regime durability instead of IRDP as its coefficient magnitude is smaller. Although all results presented in the paper holds with any measure of regime durability.

Yemen in Column II[65]. Negative effect of regime durability didn't change much and remains significant. In Column III I drop all countries that belong to Middle East and North Africa region: while the magnitude drops, it remains significant. Further, in Columns IV and V, I restrict sample to countries that at some point imposed anti-FGM campaigns and with anti-FGM campaigns and a substantial level of country-level FGM prevalence, however, the coefficient of interest does not differ statistically between two columns. The reason is, as FGM is a cultural norm that persist on the ethnic groups. Thus in a country with overall low FGM rates few ethnic groups may have high FGM prevalence and thus subject to the effect of regime stability through expectations about continuation of anti-FGM campaign. To take this into account, I drop all observations with zero FGM rates in Column VI. The effect of regime durability is significant, while smaller in magnitude, while at the same time effect of regime stability in democratic countries is huge and significant. This is consistent with the intuition: first, the effect of regime stability is overall much more substantial for those who actually practice FGM than those who ocassionally do it; second, weak democratic regimes (that have POLITY score closer to zero are more prone to coups and instability and thus people's expectations about regime stability will be more important if democracy is strong than weak. In Column VII I repeat the same specification as in Column IV but with the constructed measure of regime durability (IRDP). As this measure or regime durability better represents peoples expectations about how stable the political regime is and only takes into account subsample of countries where regime durability should have effect, because of the active anti-FGM campaign, I take results of this Column as the main result of the paper. The coefficient is bigger then the one shown in Column VII of Table 3: decrease in one standard deviation in regime durability increases the share of circumcised women by30% of its mean or by 13.5% of its standard deviation.

Now, I return to the main hypothesis, that higher regime stability decreases FGM rates conditional on active anti-FGM campaign. We have already shown, that on the whole sample of countries and subsample of countries where anti-FGM campaigns are imposed, regime stability negatively affects FGM rates. In the last column, I keep the sample of countries that do not have active anti-FGM campaign or de facto support FGM. Effect of regime durability becomes insignificant, while the interaction of durability and democracy is positive and significant, thus corroborating the hypothesis.

[65]Yemen is counted as two countries (Southern and Northern Yemen) before 1990.

Table 4: Impact of Regime Durability on FGM: Subsamples I

	I	III	III	IV	V	VI	VII	VIII
VARIABLES	Dependent Variable: Share of Circumcised Women							
Durability	-0.0583**	-0.0620**	-0.0396*	-0.0538***	-0.0411**	-0.0307*	-0.0841***	-0.157
	(0.0243)	(0.0258)	(0.0209)	(0.0182)	(0.0188)	(0.0163)	(0.0183)	(0.124)
Democracy	0.340	0.349	0.486	0.642	1.064	1.111	-0.567	-12.35
	(1.096)	(1.118)	(1.041)	(0.911)	(1.356)	(1.052)	(0.803)	(13.15)
Durability	-0.196	-0.184	-0.285	-0.312	-0.387	-0.466**	-0.192	1.396*
$\times$ *Democracy*	(0.210)	(0.219)	(0.192)	(0.237)	(0.275)	(0.204)	(0.134)	(0.600)
Controls	✓	✓	✓	✓	✓	✓	✓	✓
Fixed effects	✓	✓	✓	✓	✓	✓	✓	✓
Sample	All	only Africa	not MENA	anti-FGM	anti-FGM & high FGM rates	non-zero FGM rates	w anti-FGM IRDP	w/o anti-FGM
Observations	4,462	4,358	4,103	3,837	3,168	3,255	3,837	621
Number of clusters	23	20	18	18	15	23	18	5
R-squared	0.432	0.431	0.401	0.226	0.221	0.351	0.227	0.339

Notes: All regression contain constant. Columns I-IV are estimated using two-way fixed effects (country-ethnicity and time fixed effects for columns 1-III and region-ethnicity and time fixed effects for Column IV) method. Column V is estimated using Blundell-Bond Dynamic Panel estimation. Robust two-way clustered by country-ethnicity standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Next concern, is that ethnic groups that are unique for some countries only do not contribute to the identification of the effect of regime stability. In Table 5 provide results to the regression similar to one in Columns III of the Table 1 but with the sample limited to more then one ethnicity per country. The negative effect remains, while significance falls slightly.

Another concern arises if the marriage market is beyond locality, and thus people can intermarry between ethnic groups. This statement can be true for people living in urban areas, where the marriage market is larger, and ethnic fictionalization can be high. If people can marry somebody not from their ethnic group, thus if they previously decided not to abandon tradition because of lower chances to find a match, now they have better chances with people of other ethnicities who possibly don't require FGM. This will lead to attenuation bias in my coefficient of interest. At the same time, antropologysts and sociologist point out, that marriage market in African countries is very narrow, limiting not only by the ethnic group identity, but by smaller regional tribal identity or even kinship[66]. In this case, women in urban area will have even smaller pool of a marriage partners, since they will be surrounded by people from different ethnic groups that cannot be considered for the marriage market, and will have less eligible men from their rural homelands. To take this concern into account, in Columns II and III of Table 5 run specification 4.1 on a subsample of individuals in rural and urban areas correspondingly. Both coefficients of interest are significant, and the effect of regime stability is more then twice bigger for the urban subsample, thus supporting the view of

[66]It is very common, that marriage market is bounded by the size of the family, as men merry their cousins, as they have more information about family member then women not from the family. In addition to these, in patriarchal societies, it is often forbidden to merry cousins from the father's side, but not from the mother's side, as they do not count blood ties by mothers line.

anthropologists.

Another important source of bias can originate from the fact that women who support FGM might be biased. Thus anti-FGM company can affect only those women who think that FGM should stop but still do not abandon the tradition because of the social pressure. In Columns IV and V I run specification 4.1 on subsample of individuals who support FGM and who do not support FGM respectively. While the coefficient of regime durability is negative in both cases, it is significant only for the subsample of women who oppose FGM. This result is intuitive, since women who wish FGM to be abolished will do it if they will be sure that anti-FGM campaign will continue, and thus more willingly commit not to circumcise daughters if political regime stability is higher. Women who think that tradition of FGM should continue, are less willing to abolish it, possible, while still do this as do not want to end up in a marriage market that do not favour FGM, thus explaining the observed negative sign of the coefficient.

Table 5: Impact of Regime Durability on FGM: Subsamples II

	I	II	III	IV	V	VI
VARIABLES	Dependent Variable: Share of Circumcised Women					
$Durability$	-0.058**	-0.053*	-0.035*	-0.092*	-0.012	-0.070**
	(0.0243)	(0.031)	(0.017)	(0.047)	(0.022)	(0.033)
$Democracy_{ct}$	0.340	1.434	0.906	0.208	0.327	0.599
	(1.096)	(1.366)	(1.073)	(1.369)	(0.780)	(1.217)
$Durability_{ct} \times$	-0.196	-0.327	-0.269	-0.192	-0.0259	-0.312
$Democracy_{ct}$	(0.210)	(0.284)	(0.275)	(0.238)	(0.169)	(0.257)
Controls	✓	✓	✓	✓	✓	✓
Fixed effects	✓	✓	✓	✓	✓	✓
Sample	All	Partitioned Ethnicities	Rural	Urban	Support FGM	Oppose FGM
Observations	4,462	1,578	4,276	4,075	4,196	4,204
R-squared	0.432	0.520	0.364	0.520	0.445	0.465

Notes: All regression contain constant. Columns I-IV are estimated using two-way fixed effects (country-ethnicity and time fixed effects for columns 1-III and region-ethnicity and time fixed effects for Column IV) method. Column V is estimated using Blundell-Bond Dynamic Panel estimation. Robust two-way clustered by country-ethnicity standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

In case regime stability is associated with some health related policy program and thus also has indirect effect on FGM, in Table 6 I show that regime durability does not affect infant mortality and malaria deaths. Thus the channel works only through fight with traditional practices and not through health reforms. To be sure that regime durability doesn't capture the effect of state capacity that allows NGOs to work better or just the effect of NGOs' presence, I show no significant effect of regime durability on NGO related health outcomes such as HIV prevalence and condom usage. In addition, I show that regime durability has no effect on the traditional practice of polygamy. While being similar to FGM in a way that it is an ethnic group trait, there are no significant anti-polygamy campaigns as there are in case of FGM[67]. That's why we

[67]While this question goes beyond the scope of this paper it is partially caused by the fact that it has no direct harm to health of women and that it is allowed by the Muslim tradition.

expect regime durability to have no effect on traditional practice of polygamy[68]. Results provided in Table 6 indicate no effect of regime durability on polygamy.

Table 6: Regime Stability and Health Outcomes

VARIABLES	$Infant\quad Mortality_{ct}$	$Malaria_{ct}$	HIV_{ct}	$Condoms_{ert}$	$Polygamy_{ert}$
$Durability$	0.0136	0.0002	0.000199	-0.03954	-0.00011
	(0.00853)	(0.000343)	(0.000233)	(0.14998)	(0.00019)
$Democracy$	-0.778***	.287047***	0.0330***	0.0031856**	0.323354***
	(0.266)	(0.1692)	(0.0119)	(0.00113)	(0.1491)
$Durability$	0.00784	-0.001205	0.000195	-0.0065236	0.01775
$\times Democracy$	(0.0196)	(0.001571)	(0.000783)	(0.15094)	(0.01667)
	✓	✓	✓	✓	✓
Region and Year Fixed Effects	✓	✓	✓	✓	✓
Observations	26,670	9,047	15,923	12,829	13,742
R-squared	0.998	0.974	0.963	0.873	0.910

Notes: The dependent variable in Column I is $HIV_{ct} = \ln(1 + \text{Prevalence of HIV, female \%})$. $Infant\quad Mortality_{ct}$ is a number of deaths per 1000 infants. The data for polygamy and condoms is taken from DHS and MICS, other data is taken from WDI. Robust two-way clustered by country-ethnicity standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Despite the rich set of control variables, it might be the case that some unobserved heterogeneity still biases the effect of regime stability if omitted variables are correlated with both FGM prevalence and regime durability. In order to alleviate the concern about the effect of unobservables in the following subsection I follow Altonji et al. [2005], Bellows and Miguel [2009], Nunn and Wantchekon [2011] by evaluating the likelihood that the coefficient estimates are biased by omitted variables.

This approach is aiming to measure the strength of the likely bias caused by a possible omitted variable, i.e. "how much stronger selection on unobservables, relative to selection on observables, must be to explain away the full estimated effect". To do this, I estimate the coefficient for regime durability in two regressions, one with full set of controls ($\hat{\delta}^{UR}$) (I use Column II of the Table 1) and one restricted, with fewer or no controls at all ($\hat{\delta}^{R}$). We are interested in the ratio $\frac{\hat{\delta}^{UR}}{\hat{\delta}^{R}-\hat{\delta}^{UR}}$, that basically shows how much bigger should the effect of unobservables be to explain the coefficient of interest in unrestricted regression. On the one hand, bigger $\hat{\delta}^{UR}$ in numerator means that the effect of the omitted variable should be bigger too to explain it away. On the other hand, the smaller the difference $\left(\hat{\delta}^{R} - \hat{\delta}^{UR}\right)$ is, the smaller the effect of regime stability affected by selection on observables, and thus the selection in unobservables should be bigger as well. To sum up, the bigger the ratio, the greater should be the effect of omitted variables to bias my results, thus making it less likely to happen.

I consider three set of controls for the restricted regression: one is without any controls, one with controls for religion, polygamy and marriage market size, and one with controls for GDP per capita, population

[68] Another reason why it is important to check the effect of regime durability on polygamy is because polygamy is an important factor of the persistence of FGM. Thus regime durability might have indirect effect on FGM through polygamy.

and share of rural population. In addition to the baseline specification with Polity IV measure of regime durability, I use all other measures, provided in Section 4.4. The ratios for all measures of regime stability are provided in the Table 7. As can be seen, the range for the ratios is between 2.6 and 10.2, with mean and median equal to 6 and 5 respectively. It means that in order to claim that the OLS estimate of the effect of regime stability is fully driven by omitted variables, selection on unobservables would have to be at least 2.6 times greater than selection on observables and, on average, over 6 times greater. In other words, it is very unlikely that the estimated effect of the regime stability is fully driven by unobservables.

Table 7: Using Selection on Observables to Assess the Bias from Unobservables

Controls in the restricted set	DURABILITY (I) Polity IV	(II) PCA	(III) IRDP
None	-6.0	-2.6	-9.3
Democracy, terrorist severity	-4.3	-3.5	-10.2
Religion, polygamy, marriage market size, attitude toward FGM	-5.1	-2.8	-9.4

Notes: Regime durability in Column I is a variable Durable from the Polity IV; durability in Column II is computed as from the first principal component of the polity scores; durability in Column III is an Index of Regime Durability Perception. See Section 4.4 for more information about PCA and IRDP. Each cell of the table reports ratios based on the coefficient for measure of regime durability from two regressions with Specification 4.1. First regression include the "restricted set" of control variables, and results in coefficient $\hat{\delta}^R$. The second includes the "full set" of controls and results in the coefficient $\hat{\delta}^{UR}$. In both regressions, the sample sizes are the same, and fixed effects are included. The reported ratio is calculated as: $\frac{\hat{\delta}^{UR}}{\hat{\delta}^R - \hat{\delta}^{UR}}$. See Table 1 for the description of the full set of controls.

5 Alternative Identification Strategies

In the previous section, my results based on geographical identification provide support for the theory that political regime stability affects FGM rates, especially for the democratic regimes. Nevertheless, despite strong negative correlation that persists no-matter how I torture the data with a model various specifications, rich battery of controls, using different subsamples and exploiting individual level data, one can address that the effect of regime stability on ethnic group's FGM prevalence can be bundled with some other nationwide factor that is not taken into account by fixed effects or control variables. In this section, I pursue a number of strategies aiming to assure that the correlation between regime durability and FGM rates is in fact causal. First, following Jones and Olken [2005] I use exogenous shocks to regime durability due to national leader's death due natural causes, as such deaths are random and should not correlate with possible omitted variables. This strategy alleviates bundle treatment concern as I use within nation variation of regime durability induced by leaders deaths from natural causes. Second, I employ terrain ruggedness as an instrument and compute IV estimates of the effect of regime stability on women's decision on daughter's circumcision. While reducing time variation in political regime stability, this method allows me to estimate LATE of regime stability on womens' intentions for daughter circumcision through insurgency (Fearon and Laitin [2003], Nunn and Puga

[2012])[69].

5.1 Exogenous Shocks of Regime Durability

I use Archigos 4.0 database[70], that contains all world leaders between 1875 and 2015, and choose those leaders who had died in office. This methodology was used for the first time in Jones and Olken [2005], who checked whether the leaders mattered for economic growth. In this paper I use a leader's death due to natural causes as an exogenous shock of regime stability. By now I use 11 cases of leader's death (see the list in Table 11); as the number is small, I use it only as a robustness check to support the regime stability hypothesis.

I consider the regression absolutely similar to Jones and Olken [2005], however, instead of GDP growth rate, I use growth rate of women who are circumcised:

$$g_{ret}^{FGM} = \alpha PRE_z + \beta POST_z + v_{re} + \lambda_t + \epsilon_{rt}, \tag{5.1}$$

where g_{ret}^{FGM} is growth rate of women who are circumcised. Index r is an index of region of a country, e is an index of ethnic group, index t is an index of time, while z is an index of leader death. For this Specification I create dummy variable for 5 years before the death of the leader (PRE_z), and dummy for 5 years after the death of the leader ($POST_z$). Region-ethnicity and time fixed effects are presented with v_{re} and λ_t.

Then I use Wald test used byJones and Olken [2005]:

$$J = \frac{1}{Z}\sum_{i=1}^{Z}\frac{(\widehat{POST_i - PRE_i})^2}{2\widehat{\sigma_{\epsilon i}^2}/T}, \tag{5.2}$$

Where Z is the number of dead leaders, $\widehat{\sigma_{\epsilon i}^2}$is an estimate of $\sigma_{\epsilon i}^2$ for country$i$; T is number of time before and after death of leader and $\widehat{POST_i - PRE_i}$ is a change in growth of women who were cut in country i. As I use disaggregation by regions in order to increase number of observations, I aggregate everything to country level to conduct the test. Under the null hypothesis (that leaders do not matter) and i.i.d. errors assumption, $Z \times J \sim \chi^2(Z)$.

The results are presented in Table 8, thus I reject the null hypothesis. In addition to $t = 5$, I create tests for larger periods of time, considered as a treatment due to sudden death of a leader. With 6 years period

[69] In addition to these two, in Appendix C.4 I use the artificial division of the *Mandinka* ethnic group between Côte d'Ivoire and Guinea, countries' similar in most institutional aspects but regime stability in 1998, and rich socio-economic and demographic individual-level data by DHS to evaluate the effect of regime durability by using propensity score matching of women across the border. Higher regime durability is associated with at least 17.5% decrease in probability of being circumcised for woman in Cote d'Ivoire, than women in Guinea, that is similar to the prediction of the individual level specification in Column V of the Table 2, that predicts 23.3% decrease in probability of being circumcised for the given difference in regime durability.

[70] http://www.rochester.edu/college/faculty/hgoemans/data.htm

results become a little bit stronger, while at 7 years period, the effect decreases, while still significant. As a placebo test, perform the same test as if death of the leader was 5 and 6 years before their actual death, and show that the effect on FGM rate is insignificant. Finally, in addition to the leaders who died due to natural causes, I add leaders who resigned due to health reasons and show that results are robust to inclusion of additional leaders. In comparison with Jones and Olken [2005] who were only interested in the effect of leaders on the economic outcome, disregarding its sign. In case of FGM, we expect β to be always positive, while having no predictions about α.

Table 8: Do Leaders Matter?

	Natural Death		Natural Death or Resignation	
	J-statistics	Wald P-value	J-statistics	Wald P-value
Treatment timings				
t	2.44	0.006***	2.19	0.012**
$t+1$	3.46	0.0001***	3.13	0.001***
$t+2$	2.87	0.001***	2.88	0.001***
Control timings				
$t-5$	0.75	0.674	0.77	0.670
$t-6$	0.72	0.697	0.74	0.701
Number of leaders	11	11	13	13
Number of observations	13,029	13,029	13,029	13,029

As the magnitude of statistics J is informative, I can derive a conservative estimate of how much one standard deviation in leader durability affects share of women who were circumcised:

$$\theta = \sqrt{\frac{(J-1)\sigma_\epsilon^2}{T}} \tag{5.3}$$

According to the formula above, the effect of leader's quality explains 37% of growth rate of the FGM share. In addition, β is significantly above zero in all specifications. Despite small number of national leaders who died due to natural causes, this simple test provides additional support to the regime stability hypothesis. Nevertheless, exclusion restrictions of this particular event might be violated, as death of the leader can affect people's expectation about GDP growth, and thus their income. To address this concern, in the next section I present IV approach, that is able to solve this concern.

5.2 IV Estimates

By now, I have shown that regime durability has effect on the FGM prevalence, such as more stable regimes get rid of the harmful traditions faster then less stable. I used several different tests to separately alleviate measurement error and unobserved heterogeneity concerns. Finally, I used shocks of regime dura-

bility due to national leaders deaths, but despite the obvious exogenity of the event, this robustness check can be criticised for plausible exclusion restrictions. However, we want to be sure, that regime durability affects cultural norms through expectations of future: e.g. that NGO will return and continue to enforce commitment not to circumcise daughters.

Nevertheless, to solve this issue, and ensure that no other source of endogeneity bias my results I employ an instrumental variable strategy, to ensure the fact that regime stability has a causal effect on the decision about daughter's circumcision. The IV strategy involves ruggedness as an instrument that is correlated with perception of regime stability but uncorrelated with public health and NGO programs that may affect FGM rates through other channels[71]. The logic behind this instrument is straightforward: harsh rugged terrain makes it easy to hide, similarly to the story developed in Nunn and Puga [2012]. According to Fearon and Laitin [2003] ruggedness can help all sorts of illegal arm groups who disrupt states and have a direct effect on regime stability. In this case I am able to estimate LATE of regime stability on intention for daughter circumcision. The instrument captures the potentially helpful to concealment of arm groups terrain thus having effect on perception of regime stability, and at the same time presumably doesn't have effect on FGM prevalence, as it is a cultural norm connected to the marriage market.

In this section I perform an empirical test, to check if regime stability does indeed have an effect on FGM only through people's expectations. I use cross sections of the surveys that have a question about intention to circumcise a daughter. In this case, regime stability should have negative effect on the decision about daughter circumcision, that reflects peoples expectations if anti-FGM policy will be maintained in the nearest future.

Women's decision about circumcision of her daughter depends on her expectations on the fact if she thinks that anti-FGM campaign (e.g. by NGO) will be active by the time her daughter will be on a marriage market. Thus the perception of regime stability of the current political regime should have direct effect on her decision, such as if she will less likely want to circumcise her daughter if current regime is stable and supporting anti-FGM campaign. This allows me to determine that the mechanism of the effect of the regime stability on the cultural norms and traditional practices is peoples expectations. In addition the mechanism, this approach allows me to better control for anti-FGM policies and state capacity and quality of institutions, by controlling for NGO activity and Mo Ibrahim Index of African Governance, as, possible, the best proxy for the state capacity for African countries. I control for all possible country level institutional and individual level variables, thus making the possibility of unobserved heterogeneity highly unlikely. Finally, using ruggedness as IV, I am able to solve measurement error in regime stability and any other possible concern, regarding unobserved heterogeneity.

The main drawback of this approach is that as ruggedness does not change over time I loose most of time variation in the regime stability. In addition, possible non-classical measurement error in the dependent variable can be an issue. In case of stable regime where FGM is forbidden or village anti-FGM declaration is currently enforced, woman can possible lie about her intention, by saying, that she is not going to let her

[71] I use terrain ruggedness index (TRI) taken from Nunn and Puga [2012].

daughter circumcised. This might bias the results by overestimating the effect of regime durability. However, it is unlikely, that women circumcise her daughter later secretly from all the village as such procedures are subject to a huge fest in the village and cannot be hidden from the neighbours or relatives. More plausible, the women can be strategic and truthfully answer that she is not going to circumcise her daughter, but circumcise her later if regime stability change and daughter is still of the eligible age.

Ruggedness without a doubt has no direct effect on FGM prevalence and is plausibly uncorrelated with other factors that affect FGM. For instance, rugged terrain may have an effect on FGM through trust (e.g. through trust to the public declarations to not to circumcise girls and not marry boys to circumcised girls) as ruggedness had an effect on trust through slave trade (Nunn and Wantchekon [2011], Nunn and Puga [2012]). To take this into account, I control for the local trust (e.g. to neighbours)[72]. In addition to trust, ruggedness can have indirect effect on FGM through income (Nunn and Puga [2012]). To control for this fact, I add controls for households wealth. In case ruggedness has effect on the state capacity and quality of institutions, I control for Mo Ibrahim Index of African Governance.

Results are presented in the Table 9 where the first column reports the OLS estimates of the regression of the index of regime durability perception (IRDP)[73] on dummy for intention for daughter circumcision, and reduced form regression of the ruggedness on intention for daughter circumcision. Both coefficients have expected signs, such as more stable regimes are associated with lower probability that a woman intents to circumcise her daughter while ruggedness is associated with higher probability. The 2SLS results for the first stage and IV estimation for the ruggedness as an instrument for the index of regime durability perception (IRDP). Similarly, in column II I add trust to neighbours and trust to local government as control variables. The results didn't change, thus ruggedness helps to estimate LATE of regime stability on FGM prevalence. Partial $R^2 = 0.28$ and the first stage F statistics is equal to 27.8, way above 10, supporting my assumption about the strength of the instrument[74]. We can see, that ruggedness has expected negative relationship with regime durability, such as complex terrain leads to lower regime stability. Overall, the IV coefficient of regime stability on the decision about daughter circumcision is relatively high, such as expectation, that current regime (that support anti-FGM policy) will last for 10 years leads to 60% decrease in probability of woman's decision to circumcise her daughter. In Column II present the same specification, but use alternative measure of ruggedness as instruments.

[72]The trust data is taken from Afrobarometer surveys. The list of surveys used in this section as well as complete information about variable constructing is provided in the Appendix C.3. As all trust questions in Afrobarometer have categorical answers, thus I construct measure following Nunn and Wantchekon [2011]. First I assign value of 0 if individual responses "not at all"; 1 corresponds to "just a little"; 2 to "somewhat"; and 3 is assign if the answer is "a lot".

[73]Usage of the Index of Regime Durability Perception (IRDP) as a forward-looking measure of the regime stability makes more sense.

[74]Usage of the alternative measures of ruggedness (population weighted TRI, average slope, local standard deviation in elevation and percentage of moderate to highly rugged terrain) show very similar results.

Table 9: Causal Effect of Regime Stability on Intention for Daughter's Circumcision

	I	II
OLS: Dependent variable is an intention for daughter circumcision		Second stage: Dependent variable is an intention for daughter circumcision
IRDP	-0.014***	-0.060**
	(0.005)	(0.016)
partial R-squared		0.286
Reduced form: Dependent variable is an intention for daughter circumcision		First stage: Index of regime durability perception
Ruggedness	2.90***	-53.1***
	(0.44)	(10.6)
Individual controls	✓	✓
Regional Controls	✓	✓
Fixed Effects	✓	✓
Number of Observations	150165	150165
Number of Clusters	27	27
F-stat of excl. instrument		27.89

Notes: The top panel of Column I reports OLS estimates of the regression of dummy for intention for daughter circumcision on Index of regime durability perception. The bottom panel of Column I reports OLS estimates of the reduced form regression of dummy for intention for daughter circumcision on ruggedness. Column II reports 2SLS estimates. The top panel reports the second-stage estimates, and the bottom panel reports first-stage estimates. The following variables are used as controls: constant, dummy for mothers circumcision, mothers and public opinion about FGM, education, age, age squared, size of a marriage market, rural area dummy, dummy for polygamy, log of GDP per capita, log of population, dummy for ethnicity and religions, region dummy, trust to neighbours, relatives, strangers, local government, leader and parliament. Robust clustered by DHS sample standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

It is important to note, that IV coefficient is 4 times bigger than the OLS one. This can raise a red flag about the validity and strength of the instrument, and thus, needs to be addressed in greater details. The first reason for IV coefficient to bigger then the OLS one is that the instrument is weak. However, as was noticed above, both F statistics of the excluded instrument and partial R^2 are high enough, thus indicating that the instrument is unlikely weak.

Second reason, why IV estimate can be bigger than the OLS is due to the fact, that exclusion restrictions are violated. Even if the direct effect of ruggedness on FGM almost surely nonexisting, the indirect effect, can still be an issue. To gain a sense of the robustness of the ruggedness as an instrument, I relax the assumption of perfect exogeneity and examine the bounds I am able to place on the true effect of the regime stability on intention to circumcise daughters. Consider a generalization of the standard IV equations that allows the instrument to also enter linearly in the second-stage regression with a coefficient γ. In other words, I allow ruggedness to affect daughters' FGM directly. Herein I follow Conley et al. [2012] who showed that it is possible to estimate effect of interest (regime stability (δ)) if γ is known. Furthermore, the estimates of the relationship between ruggedness and intention to circumcise daughter in countries where there is no anti-FGM campaign provide consistent estimates of $\gamma < 0$. Applying Conley et al. [2012], the bounds on the strength of δ are actually further from zero (i.e., a stronger effect) relative to the IV estimate of δ. In other words, if women who live in low ruggedness terrain have higher propensity to circumcise daughters, then the

IV coefficient provides an underestimate of the true effect of the regime stability on daughter circumcision. Therefore, even allowing for plausibly imperfect exogeneity, the negative effect of the regime stability on decision about daughter's circumcision is confirmed.

Thirdly, IV can be bigger then IV in case, there were a measurement error in the regime stability, thus causing attenuation bias in the OLS regression. As terrain ruggedness is measured with high precision, IV helps to overcome the measurement error in the regime stability.

Finally, the reason can be in the fact, that it is a LATE, and the effect of regime stability on compliers (those countries, where FGM share is growing with the ruggedness) is bigger then on other groups. To test this hypothesis, I propose a placebo test: I omit all compliers (countries with high FGM rates and high ruggedness) and regress dummy for the intention to circumcise a daughter on the ruggedness. In case ruggedness has significant effect on intention for daughter circumcision, there is effect of ruggedness not only through compliers. Results are presented in the Table of the Appendix, where we can see, that the coefficient is not significant, and thus the whole effect of ruggedness on FGM comes through compliers.

Therefore, even allowing for plausibly imperfect exogeneity, the negative effect of the regime stability on decision about daughter's circumcision is confirmed. Overall, the results of this section suggest that the regime stability has an effect on FGM prevalence through expectations about future anti-FGM policies enforcement and that effect is causal.

6 Concluding Remarks

In this paper I describe abolishing harmful cultural traditions and norms via the global game approach, and test the importance of institutional factors such as political regime stability. This article contributes to the studies of national institutions by opening another channel how it can affect economic development, and adding to the literature on evolution and development of cultural norms and tradition, by examining the delicate interplay between formal institutions and ethnic traits. I show, that ethnic groups living in the countries with more stable regimes abandon FGM faster than those with less stable regimes, conditional on the fact that government pursue anti-FGM policy. Moreover, I explore the channel of the effect of regime stability on the cultural norm of FGM and come to the conclusion that expectations about the future is indeed the channel of how national institutions and regime stability affect FGM prevalence.

I attempted to describe such harmful cultural traditions as FGM in terms of rational mechanism - needed for better marriage market outcome for girls - and formulated the hypothesis about the factors that can decrease the number of FGM cases and thus contribute to the abolition of this tradition. In addition to the existing hypotheses of persistence of traditional health practices, I provide institutional explanations for a factor important for their persistence and abolition – stability of the regime. If people expect that a political regime which is trying to eradicate the practice of FGM will last long, and will continue to eradicate FGM, they stop cutting girls. However, if the regime is weak people expect that it will be unable to ensure a program of abolition. In this case, due to uncertainty people do FGM in order to make their daughter

better off on the marriage market whatever is happening in the country.

I follow Michalopoulos and Papaioannou [2014] by taking advantage of the fact that borders of contemporary African states were arbitrarily drawn by the colonial administration in Europe thus partitioning numerous ethnic groups in different countries, subjecting identical cultures residing in geographically homogeneous territories to different country-level institutions, and I am able to identify causal effect of national institutions and regime stability in particularly on the persistence of FGM practice. Thus collapse of regime that had lasted for 10 years will increase share of circumcised women on 35% standard deviation for democracies, and on 4.7% of the standard deviation for autocracy. At the individual level one standard deviation of decrease in durability explains 15% of the probability of being circumcised in democracies, however the effect is not significant for autocracies.

To justify that the relationship is indeed causal, I pursued a number of different strategies. First, I controlled for the set of institutional controls, such as political regime, state capacity and anti FGM legislation. Second, my findings are robust to the usage of alternative measures of regime stability and not driven by particular subsample of countries. Third, following Nunn and Wantchekon [2011], I showed that on average selection based on unobservables would have to be six times greater than selection on observables in order to complete explain away the effect of regime durability on the FGM prevalence. Forth, similarly to Jones and Olken [2005] I use exogenous shocks of regime stability caused by the natural deaths of national leaders. Finally, I use IV strategy with ruggedness as instrument for regime durability and show its causal effect on women decisions to circumcise their daughters, and conduct a number of tests to back exclusion restrictions.

This paper provides evidence of the utmost importance of the national institutions on the evolution of cultural norms and traditions, thus affecting all aspects of human life and national economies.

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A Appendix: The Model

You may ask why people continue practicing FGM if, for example, more than half of African women dispraise it? The problem is that if one household will stop doing FGM or using the services of a witch doctor instead of a conventional one, while all other people will not stop doing this, such deviations will be punished, either economically due to worse marriage market conditions or with autarky. It should be noted that regarding FGM as a social coordination problem can be justifiably criticized by a recent study (Efferson et al. [2015]). Nevertheless, usage of global game approach allows to describe social phenomena of FGM without contradiction.

Decision of each particular household depends on the actions of other households in the community, however it also depends on uncertainty of what other households will do. Thus the share of people that will choose not to circumcise their daughters will depend nontrivially on the beliefs about fundamentals (expectation of the future in our case). This fact makes modeling traditional practices such as FGM consistent with empirical findings of Efferson et al. [2015] who didn't find any pronounced discontinuity in FGM rates in cutting and noncutting communities, as global game can yield any FGM share, depending on peoples expectations.

In this section I use the global games approach, developed by Morris and Shin [1998, 2004], to model the process of abolition of a harmful cultural tradition and the effect of regime stability[75].

Setup

Consider an area[76] with a continuum of agents-households (i) of the measure one, uniformly distributed over $[0, 1]$. As marriages between ethnic groups are extremely rare, I can assume that there is no ethnic heterogeneity among households and they belong to one ethnic group. I assume that each agent is a household or a woman that has a daughter.

Household i's payoff can be rewritten as follows:

$$u_i = \begin{cases} m - c & \text{if do FGM} \\ \theta + \tau\,(1 - A) & \text{if don't do FGM} \end{cases} \tag{A.1}$$

where $m \geq 0$ is an exogenous private benefit from following the tradition (UNICEF et al. [2008], UNI [2013]) or benefit on the marriage market from being circumcised (Mackie [1996], Mackie and LeJeune [2009], Unicef et al. [2007])[77], and $c > 0$ is a health cost of being cut (Dorkenoo and Elworthy [2006], Koso-Thomas [1987]). Parameter θ captures the expected lifetime value of benefits from governmental or international

[75] The model can be easily generalized into Dynamic Global Game according to Angeletos et al. [2007], however result in similar predictions and are not presented for the sake of brevity.

[76] It can be a region, a city, a village or a cluster of villages, territory that determines the size of the marriage market. Hereafter I use village as a baseline area.

[77] As I cannot distinguish them in the data, I indicate them as one parameter.

NGOs that fight against FGM in that village. Here I assume that FGM is a status quo: people have innate preferences for FGM, as their parents, grandparents, etc. did it and told them to do so.

Importantly, I allow "punishment" for deviation for households that do not undergo FGM: their payoff depends on $A \in [0,1]$ the total share of women deciding not to circumcise their daughters (Mackie [1996]). It means that the deviated household is punished by its kin (e.g. through worse marriage market conditions), and $\tau \leq 0$ is a magnitude of this punishment. Nevertheless, as households deviated from the tradition, and didn't circumcise daughters, there are no costs due to worse health conditions (c).

I assume that villagers have a diffuse prior distribution of $\theta \in \mathbb{R}$. Each villager receives an independent private signal $x_i = \theta + \xi_i$, where $\xi_i \sim \mathcal{N}(0, \beta)$, is noise. I assume that this signal is delivered by NGOs and represents expected lifetime value of benefits if they abandon the tradition. In addition, all citizens receive common signal $p = \theta + \varepsilon$, where $\varepsilon \sim \mathcal{N}(0, \alpha)$, is noise. I assume that this signal represents knowledge about regime stability that has effect on the evaluation of the future benefits from NGOs.

In this case people update their private signal with the public one, such as $\bar{\theta}_i = \theta | p, x_i \sim \mathcal{N}\left(\frac{\beta x_i + \alpha p}{\alpha+\beta}; \quad \frac{\alpha\beta}{\alpha+\beta}\right)$.

Analysis

Villagers have a strategy profile:

$$a_i(\bar{\theta}_i) = \begin{cases} \text{Do FGM} & \text{if } \bar{\theta}_i \leq \kappa^* \\ \text{Don't do FGM} & \text{if } \bar{\theta}_i > \kappa^* \end{cases} \tag{A.2}$$

That is villagers do not do FGM if their beliefs about future benefits from NGOs is high, i.e. $\bar{\theta}_i$ is above some threshold κ^*. There is a unique equilibrium cutoff κ for the villagers defined by the expectation of future benefits from NGOs that makes an individual indifferent regarding the choice of following FGM tradition or not. In this setting, everybody got the signal about regime stability and they know that everybody knows it.

The equilibrium participation threshold κ is the solution to the equilibrium condition:

$$\kappa^* + \tau\Phi\left(\sqrt{\gamma}(\kappa^* - p)\right) = m - c, \tag{A.3}$$

where $\gamma = \frac{\beta(\alpha+\beta)}{\alpha^2(\beta+2\alpha)}$. As it is shown in Morris and Shin [1998, 2004] the equilibrium is unique if regularity conditions $\tau^2\gamma < 2\pi$ hold (see the proof in the Appendix A).

Comparative statics and discussion of existing hypothesis of the persistence of traditional practices

Having pinned down the equilibrium thresholds κ^* we can derive the equilibrium participation, A:

$$A = \Phi\left(\sqrt{\gamma}(p - \kappa^*)\right) \tag{A.4}$$

Proposition 1. *: The share of people who abandon the tradition is always increasing in the signal about regime stability ($\frac{\partial A}{\partial p} = \sqrt{\gamma}\phi\left(\sqrt{\gamma}(p - \kappa^*)\right) > 0$).*

This very simple model also explains all other existing hypothesis about persistence of FGM (See propositions 2 and 3 in the Appendix A).

For the purposes of this paper I need to determine the functional form for the regression analysis, and show the comparative statics for the effect of regime durability.

First, I introduce the equation for the share of deviating households, which is given by $A = \Phi\left(\sqrt{\gamma}(p - \kappa^*)\right)$. It is continuous and strictly increasing in p. Let $fgm = 1 - A$ be the share of circumcised women (i.e. those households who don't deviate from the tradition).

$$fgm = \Phi\left(\sqrt{\gamma}(\kappa^* - p)\right) \tag{A.5}$$

The reduced form of equation A.5 is used for the first empirical specification in the Section 4. The model described above includes all previous hypothesis about existence and persistence of FGM, while includes the hypothesis about regime durability.

Proofs

Condition for uniqueness of equilibrium:

Let's define $U(\kappa^*)$ as the left-hand side function of the equation (2). A sufficient condition for a uniqueness of the solution is that the left-hand side increases weakly monotonically in κ^*. Here I follow Morris and Shin [1998, 2004] proof of uniqueness:

$$U = \kappa^* + \tau\Phi\left(\sqrt{\gamma}(\kappa^* - p)\right), \tag{A.6}$$

We need the derivative of $U(\kappa^*)$ with respect to κ^* to be non-negative:

$$\frac{\partial U}{\partial \kappa^*} = 1 + \tau\sqrt{\gamma}\phi\left(\sqrt{\gamma}(\kappa^* - p)\right) \geq 0, \tag{A.7}$$

$$1 \geq \tau\sqrt{\gamma}\phi\left(\sqrt{\gamma}(\kappa^* - p)\right) \quad \geq \tau\sqrt{\gamma}\frac{1}{\sqrt{2\pi}}, \tag{A.8}$$

Here I use the fact that standard normal p.d.f.' $(\phi(x))$ maximum value is equal to $\frac{1}{\sqrt{2\pi}}$ at $x = 0$ and substituting $\phi(\cdot)$ with $\frac{1}{\sqrt{2\pi}}$ in equation A.8. This gives the sufficient condition for a unique equilibrium:

$$2\pi \quad \geq \tau^2\gamma \quad \blacksquare \tag{A.9}$$

Proofs of propositions that reflect other hypotheses of persistence of FGM:

Proposition 2. *: Share of people who abandon the tradition is always decreasing in social punishment for not following the tradition ($\frac{\partial A}{\partial \tau} < 0$).*

Proof:

$$\kappa^* + \tau\left(1 - A\right) = m - c \tag{A.10}$$

$$\frac{\partial A}{\partial \tau} = -\frac{f'_\tau}{f'_A} = \frac{(1-A)}{\tau} < 0 \quad \blacksquare \tag{A.11}$$

The parameter τ parametrizes punishment by the kin for not following the tradition. We can assume that improvement in women's rights\bargaining power and modern values lead to lesser punishment for those women who do not undergo circumcision. Thus Proposition 2 is in line with this hypothesis stated in various sources[78] and empirical evidences provided in Harari [2014].

Proposition 3. *: Share of people who abandon the tradition is always increasing in health cost of FGM ($\frac{\partial A}{\partial c} > 0$) and decreasing in marriage benefits of FGM ($\frac{\partial A}{\partial m} < 0$).*

Proof:

$$\frac{\partial A}{\partial c} = -\frac{1}{\tau} > 0 \text{ and } \frac{\partial A}{\partial m} = \frac{1}{\tau} < 0 \quad \blacksquare \tag{A.12}$$

Proposition 3 can help us to explain the situation in Egypt where share of women with FGM is above 98%. By allowing to perform FGM in the hospitals rather then in unsanitary conditions at home, health costs of FGM decreased dramatically (Shell-Duncan [2001]). At the same time, if benefits through marriage increase for women who have undergone circumcision, it becomes more profitable for families to circumcise their daughters (Wagner [2015]).

[78] See Kennedy [1970], Hayes [1975], Ebrey [1991], El Dawla [1999], Yount [2002], Easton et al. [2003], Finke [2006].

B Appendix: Tables

Table 10: List of the Samples used in the Paper

#	Country	DHS	MICS	Data of FGM Prohibition
1	Benin	2001, 2006, 2011-12		2003
2	Burkina Faso	1998, 2003, 2010		1996
3	Central African Republic	1994-95	2010	1966
4	Cameroon	2004		-
5	Chad	2004	2010	2003
6	Cote d'Ivoire	1994, 1998, 2011-12		1998
7	Egypt	1995, 2005, 2008, 2014		2008
8	Gambia	2013		2015
9	Ghana		2010-11 (*Accra*), 2011	1994
10	Guinea	1999, 2005, 2012		1965
11	Iraq		2011	2011
12	Kenya	1998, 2008-09		2001
13	Mali	1995-96, 2001, 2006, 2012-13		-
14	Mauritania	2000-01	2011	2005
15	Niger	1998, 2006, 2012		2003
16	Nigeria	1999, 2003, 2008, 2013	2011	1999-2002 (multiple states)
17	Senegal	2005, 2010-11, 2014		1999
18	Sierra Leone	2008, 2013	2010	-
19	Somalia		2011 (*Northeastern zone*, *Somalilend*)	2012
20	Tanzania	1996, 2004, 2010		1998
21	Togo	2013-14	2010	1998
22	Yemen	2013		2001

Source: DHS, MICS, Rahman and Toubia [2000] and UNI [2013]

Table 11: List of Leaders used in 5.1

#	Leader's Name	Country	Year of death	Cause of Death
1	Ahmad bin Yahya Hamidaddin	Northern Yemen	1962	While sleeping
2	Sir Milton Margai	Sierra Leone	1964	After "brief illness"
3	Abdul Salam Arif	Iraq	1966	Plane crash
4	Gamal Abdel Nasser	Egypt	1970	Heart attack
5	Jomo Kenyatta	Kenya	1978	While sleeping
6	Ahmed Ould Bouceif	Mauritania	1979	Plane crash
7	Sekou Toure	Guinea	1984	Heart attack during surgery
8	Seyni Kountche	Niger	1987	Cancer (brain tumor)
9	Felix Houphouet-Boigny	Cote d'Ivoire	1993	Following surgery for prostate cancer
10	Sani Abacha	Nigeria	1998	Heart attack (some say poisoned)
11	Gnassingbe Eyadema	Togo	2005	Heart attack
		Resignation as an end of the rule		
12	Ahmadou Babatoura Ahidjo	Cameroon	1982 (resignation)	Resigned, for health reasons
13	Umaru Musa Yar'Adua	Nigeria	2007(resignation)	Resigned, for health reasons

Source: Archigos 4.0 database.

C Online Appendix

C.1 Tables

Table 12: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
FGM	607648	0.426	0.494	0	1
Age of FGM	258747	6.054	5.275	0	30
Age	607648	28.78	9.404	10	49
Total Years of Schooling	607648	4.937	5.310	0	25
Age at Marriage	474611	17.987	4.294	0	49
Ever Married	607648	0.784	0.411	0	1
Rural	607648	0.609	0.488	0	1
Number of Children ever born	607648	2.976	2.862	0	29
Public opinion for continuation of FGM	607648	0.580	0.255	0.032	1
If thinks FGM should not continue	607648	0.428	0.495	0	1
Wealth Index	607648	0.265	0.278	-1	1
Ethnicities	607648			1	217
Regions	607648			1	326
Catholic	607648	0.0893	0.2852	0	1
Muslim	607648	0.5235	0.4994	0	1
No Religion	607648	0.0163	0.1270	0	1
Other Religion	607648	0.2043	0.4031	0	1
Other Christians	607648	0.0810	0.2729	0	1
Protestants	607648	0.0614	0.2401	0	1
Indigenous Beliefs	607648	0.0238	0.1525	0	1

Source: DHS, MICS.

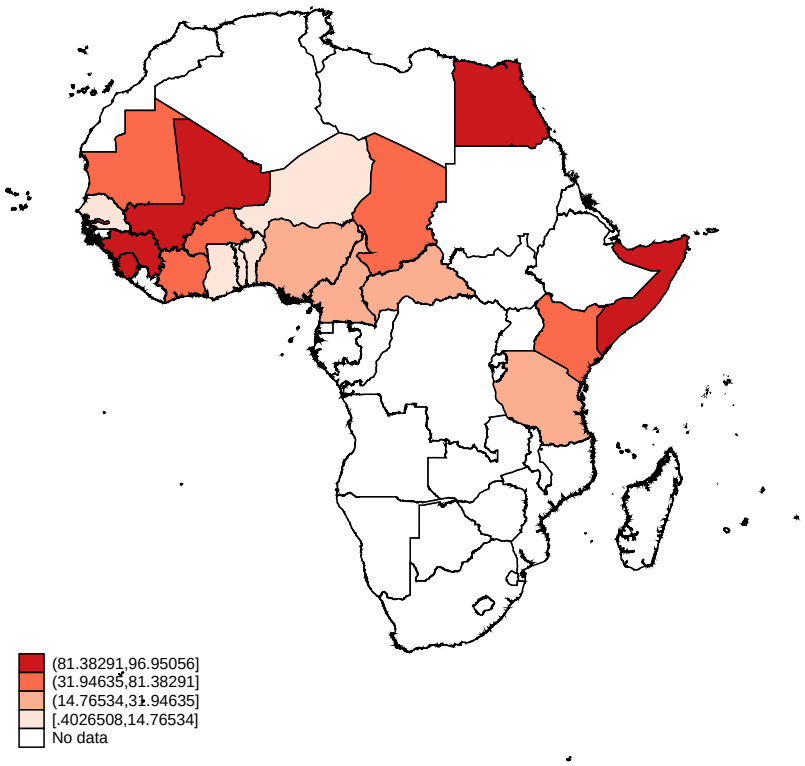
Table 13: Determinants of the length of the political regime

	I	II	III	IV	V
VARIABLES	$length_{ct}$	$length_{ct}$	$length_{ct}$	$length_{ct}$	$length_{ct}$
Durability	0.739***	0.745***	0.756***	0.750***	0.566***
	(0.152)	(0.150)	(0.119)	(0.0857)	(0.120)
Polity2	-0.890***	-0.920***	-0.983***	-0.986***	-0.701***
	(0.218)	(0.223)	(0.201)	(0.196)	(0.169)
Leader's Age	0.0553	-0.0511	-0.00120	0.00190	-0.0161
	(0.395)	(0.337)	(0.309)	(0.321)	(0.232)
Leader's Age squared	-0.000774	-0.000339	-0.00109	-0.00111	-0.000803
	(0.00339)	(0.00309)	(0.00277)	(0.00283)	(0.00198)
Leader's gender		-13.75**	-13.92**	-13.88**	-7.468**
		(6.455)	(5.548)	(5.490)	(2.976)
Age at the beginning of leader's reign		0.0914	0.167	0.166*	0.106
		(0.0935)	(0.102)	(0.0968)	(0.0661)
Irregular entry into power			-1.414	-1.419	0.0167
			(1.206)	(1.202)	(1.228)
Foreign Imposition			-9.568***	-9.567***	-3.562
			(3.255)	(3.248)	(2.494)
Regular exit of leader			-0.768	-0.781	0.0840
			(2.019)	(2.074)	(2.002)
Natural Death			5.838**	5.832**	4.291**
			(2.590)	(2.586)	(2.121)
Irregular exit of leader			-2.469	-2.496	-1.039
			(1.750)	(1.869)	(1.719)
Foreign involvement in leader's exit			-9.515**	-9.576**	-4.296
			(4.252)	(4.411)	(3.057)
Retired Due to Ill Health			7.314***	7.274***	7.075***
			(1.949)	(1.706)	(1.510)
Durability squared				9.14e-05	0.00282*
				(0.00151)	(0.00157)
log of GDP per capita					1.909
					(1.505)
log of population					2.487
					(7.703)
Constant	7.111	6.751	1.829	1.818	-53.29
	(11.83)	(11.72)	(10.77)	(10.83)	(130.5)
Country and Year fixed effects	✓	✓	✓	✓	✓
Observations	1,952	1,952	1,952	1,952	1,630
R-squared	0.914	0.915	0.927	0.927	0.935

Note: Dummies for leader's "regular entry into power" and "leader is still in office" are used as a baseline. Robust clustered by country standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

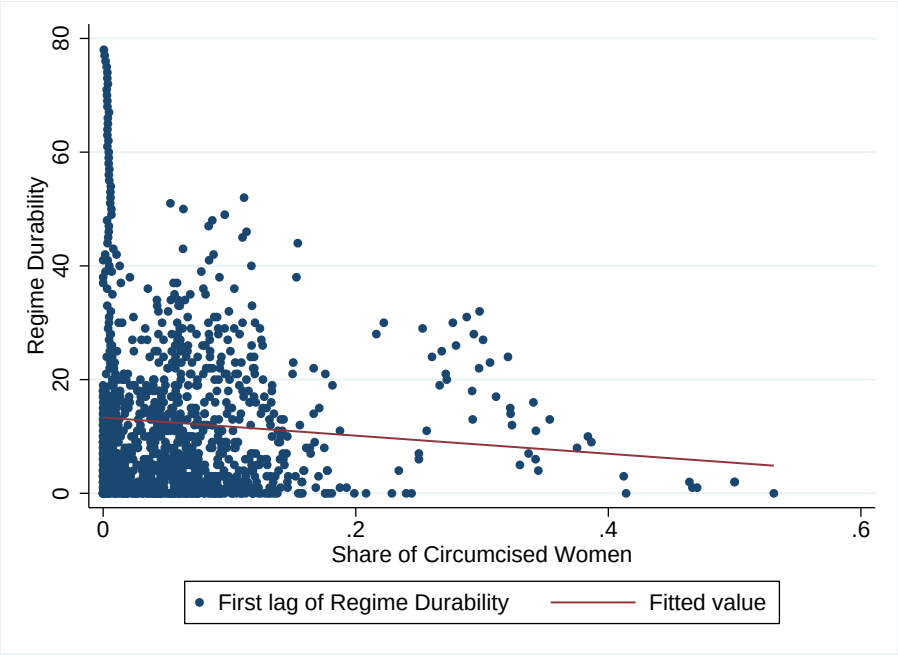
C.2 Figures

Figure C.1: Map of shares of circumcised women by country



Note: Averaged FGM rates (with red color) across all African surveys used in the paper.

Figure C.2: Regime Durability and FGM



Notes: scatter plot of the durability of the regime and fraction of women that had FGM out of all women eligible for circumcision at a given year for all countries used in the paper between 1970 and 2005. Similar graph without trend and countries fixed effects also shows negative correlation, but not presented as it does not provide insight to the true values of regime durability and yearly FGM rates. Ethnic groups that never practice FGM are omitted.

Figure C.3: Regime Durability and FGM for countries that fight against FGM by 2005

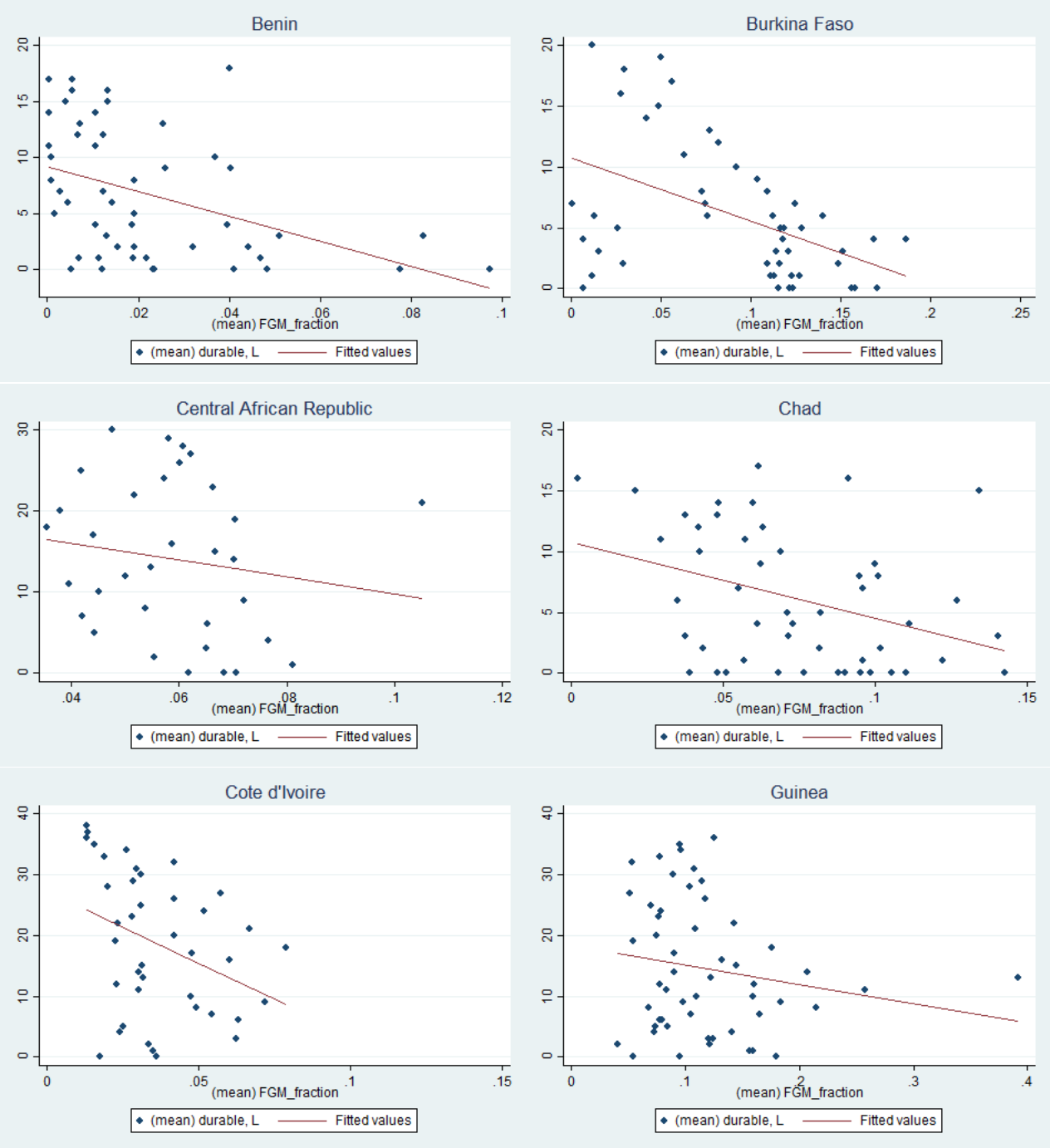


Figure C.4: Regime Durability and FGM for countries that fight against FGM by 2005

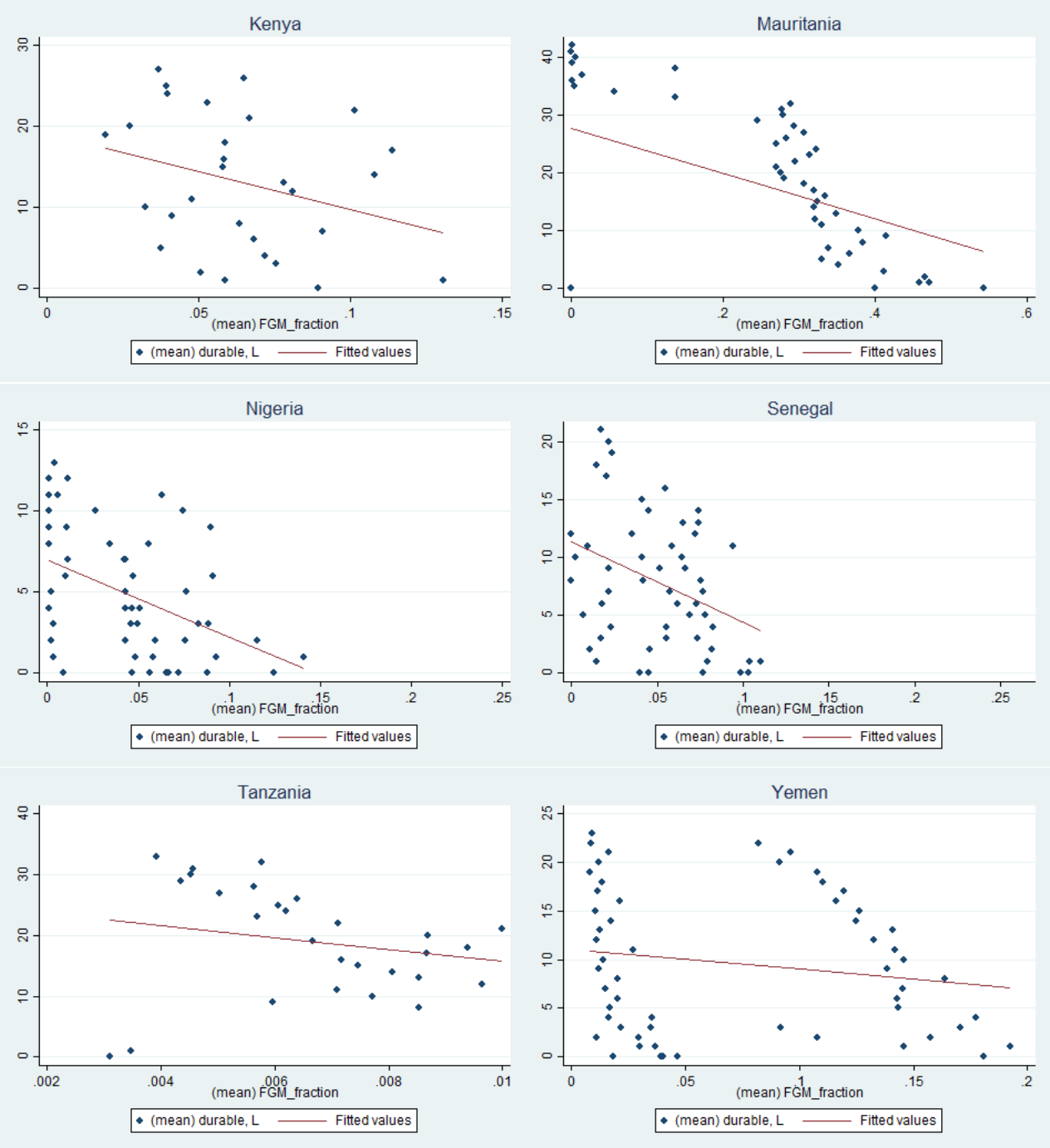


Figure C.5: Regime Durability and FGM in countries with small FGM prevalence.

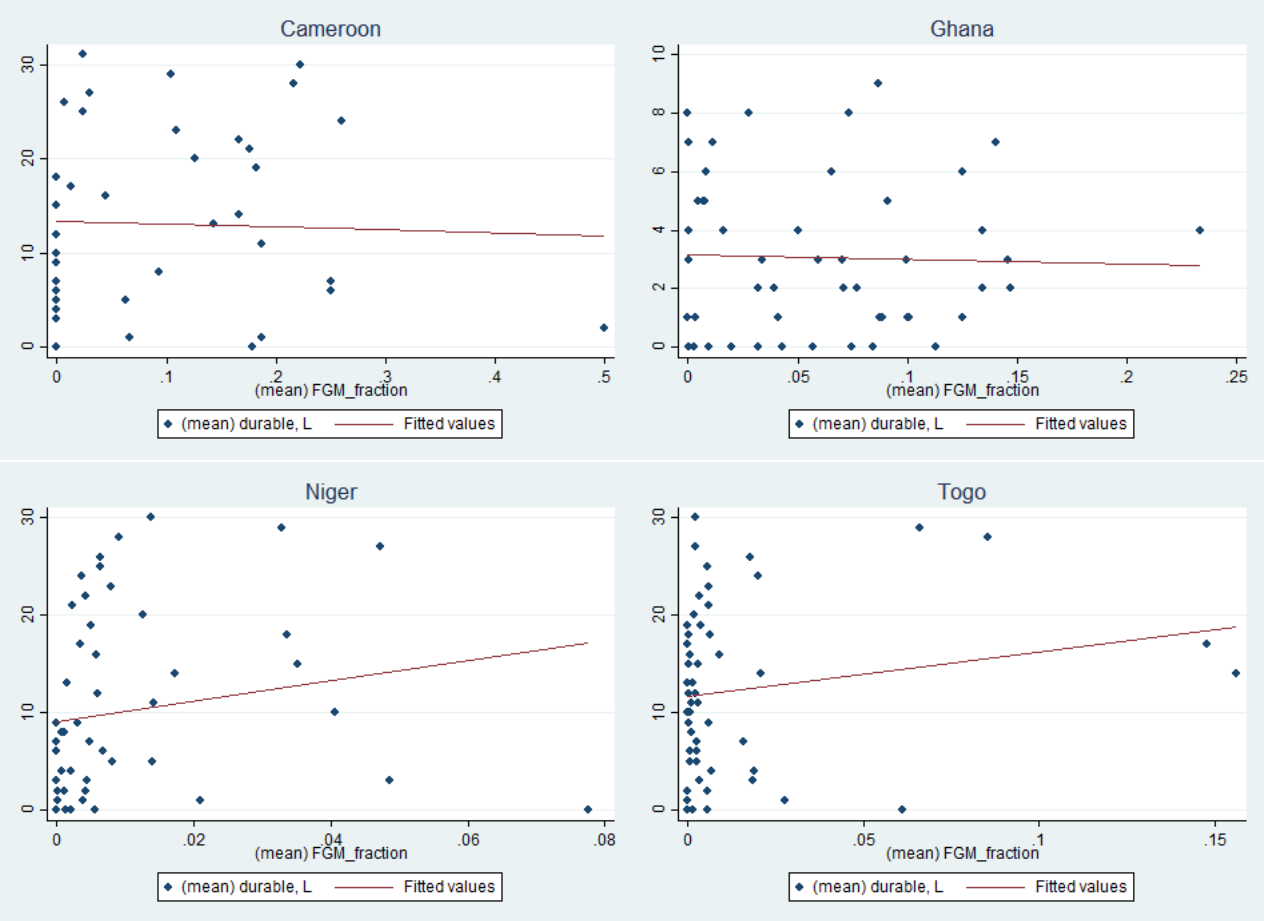


Figure C.6: Regime Durability and FGM in countries without consistent anti-FGM policy

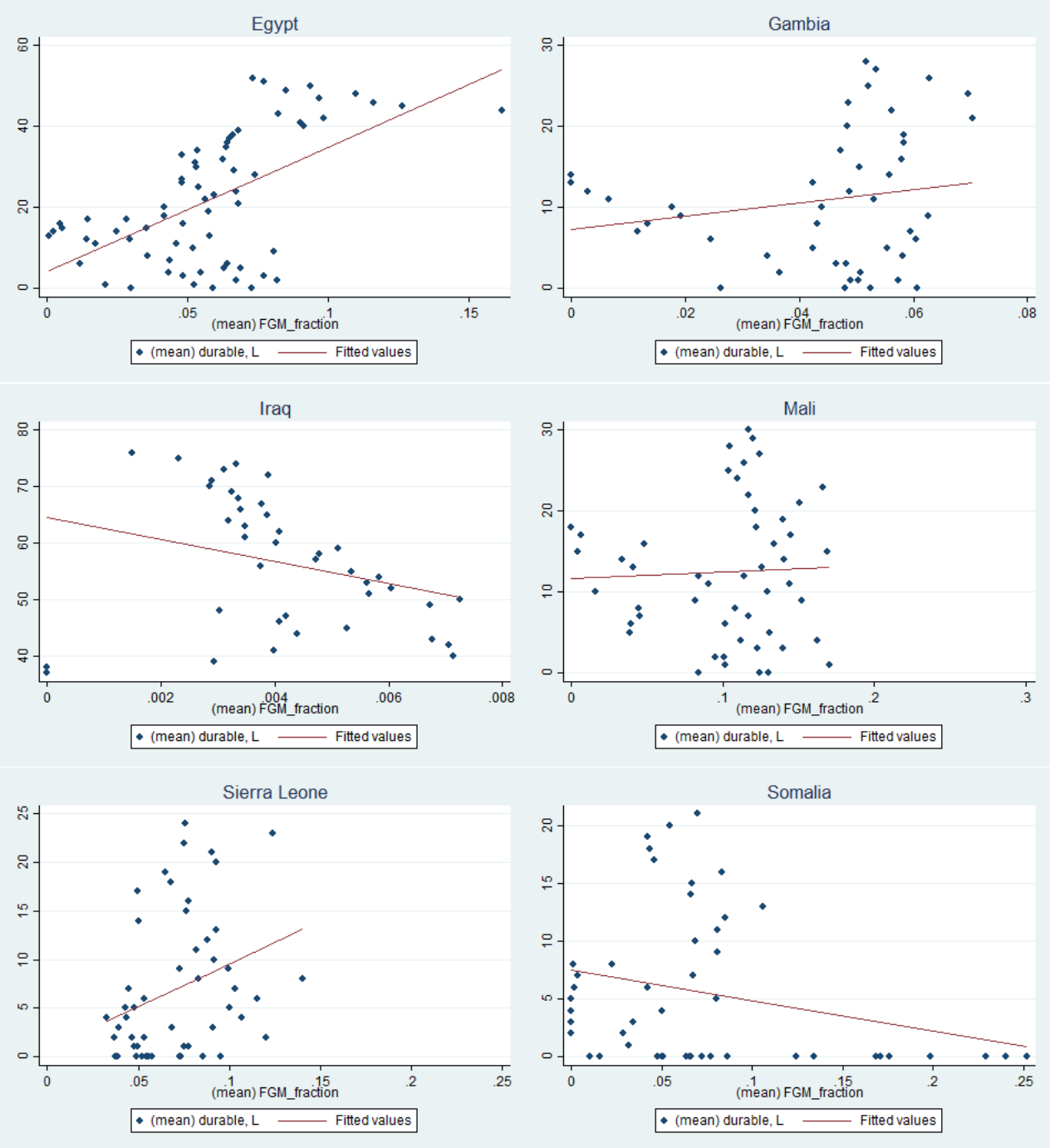
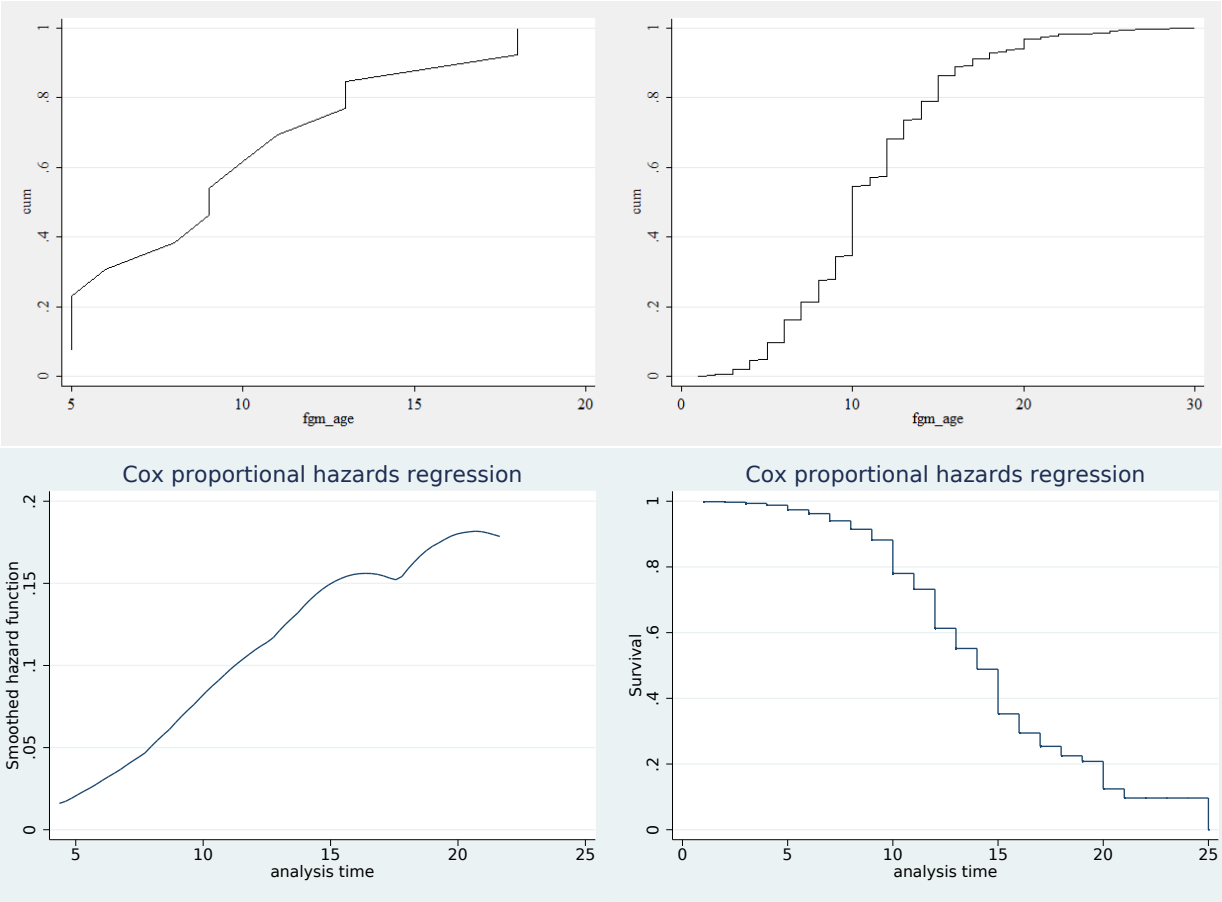
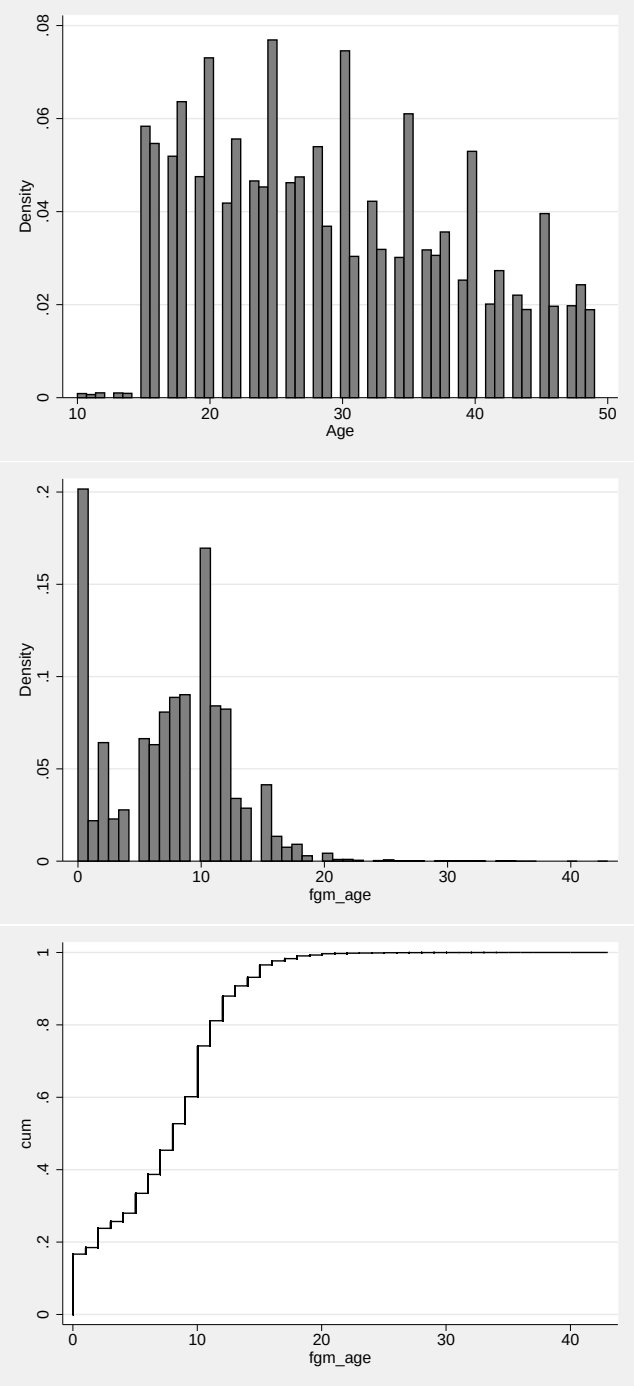


Figure C.7: Cumulative distribution of FGM age for *Akan* and *Guerze* ethnicities



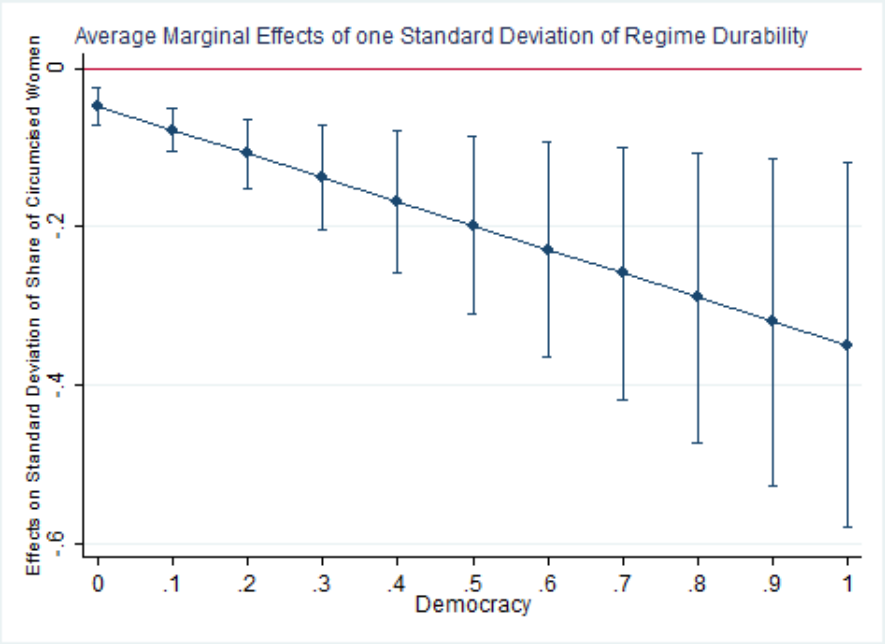
Note: Hazard and survival functions are estimated on a subsample of women who have undergone circumcision.

Figure C.8: Density and Cumulative Distribution of Age and FGM Age



Note: Based on all surveys used in the paper.

Figure C.9: Marginal Effects of Regime Durability



Note: Marginal effects of regime durability as estimated in Column IV of the Table 1.

C.3 Variables' Construction

In this subsection I explain how control variables used in this study were constructed.

I create the variable $circ_i$ based on the following questions: "Have you ever been circumcised?" and "What type of circumcision do you have?". If woman i answered "Yes" for the first question, or not "No" and answered on the second question, I assigned value of 1 to the $circ_i$. For women who answered "No" on the first question I assigned value of 0.

For further estimations for each women in my sample I created a panel of observations corresponding for all her years of life when she is eligible for FGM, such as $fgm_{iret} \in \{0; 1\}$ is a variable determined for each woman i, region r, ethnicity e and year t:

$$fgm_{iret} = \begin{cases} 1 & \text{if } circ_i = 1 \text{ and } t = s \\ 0 & \text{if } circ_i = 1 \text{ and } t < s, \\ 0 & \text{if } circ_i = 0 \end{cases} \tag{C.1}$$

where $circ_i = 0$ if woman i was circumcised and equal to unity otherwise, and $s = fgm \quad age_i$ is a age when woman i was circumcised. For example, if $eligible_{er}$ for particular region r and ethnicity e is between the age of 0 and 19, then for each woman of this ethnicity and region I make 20 observations. Women who had no FGM ($circ_i = 0$) will have $fgm_{iret} = 0$ for all observations, and women who have FGM ($circ_i = 1$) at time s will have $fgm_{iret} = 0$ if $t < s$, and $fgm_{iret} = 1$ if $t = s$, and all observations for $t > s$ will be dropped from the panel. I drop these data as FGM is irreversible and I can consider it as absorbing state.

There are about 221 ethnicities in the dataset. As ethnicity for some samples of (Egypt, Mauritania and Tanzania) does not exist and is for some (Niger and Nigeria) partially missing, I constructed ethnicity by using language and/or religion. For example, almost all Muslims in Nigeria (more than 90% in the Nigerian sample of 1999) belong to *Hausa/Fulani* group, and for all missing observations I assigned all Muslims in Nigerian samples (2003 and 2008) as *Hausa/Fulani*; All Christian speaking *Coptic* language or *Christian Orthodox* not speaking *Amharic* language in Egypt are *Copts*; if respondent speaks *Zarma* in Niger – I assigned *Djerma/Songhai* ethnicity; etc. I drop ethnicities that have no FGM cases (mostly foreigners). Finally, I unite all ethnicities that have fewer than 10 individuals into "*Other "Name of the Country""* groups,giving a total result of 204 ethnicities.

Due to the fact that some samples had very detailed names of religious denomination, while some had very broad names of religious confessions, for control on religion I created dummy for *Islam, Catholic, Protestant, Orthodox, Other Christian, Indigenous believes, Atheists* and *Other*. For example, I merged *Traditional/spiritual/animist, traditional, animist, voodoo* and etc. smaller religious groups in one *Indigenous beliefs* category.

To take into account capacities of marriage market in specification 1, I construct a *Share of Non-Married Women*: fraction of all women who were married during year t divided by all number N^{um}_{iert} of women that might get married (if more than 10 years and not married yet) in region r, year t.

$$Share \quad of \quad Non-Married \quad Women_{ret} = 1 - \frac{\sum_{i=1}^{N_{iert}^{um}} \mathbb{I}\left(married_{iret} = 1\right)}{N_{iert}^{um}}, \tag{C.2}$$

For individual level data specification, I produce *Marriage Switch* variable, that is equal to 0 unless woman is married, and equal to 1 when she got married, and stay equal to unity for all years after. This variable is crucial, as FGM is closely related to Marriage market, and the fact that a woman already got married while having no FGM should significantly decrease her chances of being circumcised in the future.

$$Marriage \quad Switch_{it} = \begin{cases} 1 & \text{if } married_i = 1 \text{ and } t \geq s \\ 0 & \text{if } married_i = 1 \text{ and } t < s, \\ 0 & \text{if } married_i = 0 \end{cases} \tag{C.3}$$

where $married_i = 0$ if woman i was never married, and equal to unity if she was, and s is an "*Age of the first Marriage*".

Lastly, I use *Total Years of Schooling* and *Age* variables, to construct variable of schooling for each woman at each year of her life t while she is eligible for circumcision:

$$Years \quad Of \quad Schooling_{irt} = \begin{cases} 0 & t \in [0;6] \\ \sum_{s=1}^{t} 1 - 6, & t \in [7; TYS_{ir}] \\ TYS_{ir} & t > TYS_{ir} \end{cases} \tag{C.4}$$

While computing $Years \quad Of \quad Schooling_{irt}$ I assume that all women start to get education at the age of seven, and study continuously year by year without breaks.

I use logarithms of GDP per capita and population, and trade-to-GDP ratio as country level control variables.

Trust measures are taken from aggregated on a regional level data from individual level 5th, 4th and 3rd waves of Afrobarometer. Those aggregated data was merged to the DHS and MICS datasets through one-to-one regional and year (the nearest available year) mapping.

In addition, I create an indicator for democratic countries based on $POLITY2_{ct} \in [-10; 10]$ score by Project [2013]:

$$Democracy_{ct} = \begin{cases} 0 & \text{if } POLITY2_{ct} < 0 \\ \frac{POLITY2_{ct}}{10} & \text{if } POLITY2_{ct} \geq 0 \end{cases} \tag{C.5}$$

The variable $Democracy_{ct} \in [0; 1]$ represents authoritarian or in-transition political regime if $Democracy_{ct} \longrightarrow 0$ and a full democracy, if $Democracy_{ct} \longrightarrow 1$.

PDI is a binary index, less subjective then POLITY score, such as $PDI = 1$ if there was a turnover in government following an election, and equal to 0 otherwise. FHPI measures how easily people can participate

in political process (vote, run for office, join political parties, elect representatives, etc.). Lastly, GWF offers the most systematic examination of autocratic governments, thus better capturing the spells of authoritarian rule. To create a suitable democracy index that will distinguish democracy and autocracy, I mark all types of autocracies identified by GWF as 0 and all other countries as 1. In this case regime durability based on PDI and GWF data show the number of years (cumulative) since the last change in authority characteristics (defined as a 0-to-1 or 1-to-0 switch in PDI and GWF), while the regime durability based on the Freedom House data is computed the same way as it is done by Polity IV.

C.4 Exploiting artificial boundaries of African countries

Following Michalopoulos and Papaioannou [2014] I exploit the fact, that African borders were mostly drawn by the colonial administration, disregarding historical areas of ethnic habitation. I use the fact that historical homelands of the *Mandinka* ethnicity were artificially divided between Cote d'Ivoire and Guinea. In 2009, Guinea experienced durable regime, while regime in Cote d'Ivoire was not durable. In comparison with the model specifications from Section IV, this robustness check is relying on using matching techniques to find virtually similar women of *Mandinka* ethnic group leaving across Cote d'Ivoire's and Guinea's borders. I assume that those women living in Cote d'Ivoire had a treatment due to high level of regime durability, while those who lived in Guinea had shock of durability. Thus by using propensity score I match women in Guinea with women in Cote d'Ivoire based on their socio-economic characteristics.

Propensity score matching is suitable in this scenario, as the selection into treatment is completely random. All women of the *Mandinka* ethnicity were randomly borne in Cote d'Ivoire or Guinea and thus were treated randomly. In this case we can say, that conditional on their observable socio-economic characteristics the assignment to treatment is random and matching strategy will allow us to make convincing comparison between treated and control subjects.

One can ask if regime durability is the only parameter that is different between two countries and can have direct or indirect effect on persistence of FGM? Clearly, by matching all woman with the same cultural norms tradition (e.g. share of circumcised women among *Mandinka* people is about 90% in both countries, while total share of circumcised women is 96% for Guinea and 34% for Cote d'Ivoire) and religion ($> 99\%$ are Muslim) living in a similar geographical zone and environment by their socio-economic and background information, all country level institutional effects will be impossible to disentangle with the effect of shock in durability. To address this challenge I will try to explain why both countries are similar in all ways but regime durability. First, both countries were ruled by France and share the French continental legal system. As of 1998, both countries were considered as autocracies by Polity IV definition, and had the same score (35 out of 100) of Mo Ibrahim Index of African Governance[79] and its main components (safety and rule of law, participation and human rights, sustainable economic opportunity and human development). Both countries didn't suffer from any internal or external conflict. Finally, the regions of *Mandinka* ethnic group habitat are situated at the maximum distance from its capitals, and according to the Michalopoulos and Papaioannou [2014] the effect of formal institutions should be minimal. The only institutional difference between the two countries is regime durability: the variable $Durability_{\text{Cote d'Ivoire},1998} = 38$, while $Durability_{\text{Guinea},1998} = 0$.

In order to estimate and balance propensity score, I use an algorithm proposed by Becker et al. [2002]. The list of control variables used for the logit estimation is the following: total years of education, age, total number of children, woman's opinion about FGM, dummy for rural area, age of the daughter, line number of the child, household's wealth index, dummy for marital status, and age of first marriage. After testing the balancing properties of the propensity scores in all blocks (for each covariate I test if the means are

[79] This index measures provision of the political, social and economic goods and controlling for provision of human rights for citizens of African states.

Table 14: Average Treatment Effect on the Treated for *Mandinke* Ethnicity

Matching method	Number of treated	Number of controls	ATT	Bootstrap standard errors	t-statistics
Nearest neighbour	26	18	-0.462	0.210	-2.194
Radius	22	167	-0.175	0.076	-2.299
Kernel	26	167	-0.392	0.162	-2.416
Stratification method	21	172	-0.333	0.101	-3.306

statistically different for treated and controls in all blocks) I estimate the average treatment effect on the treated. Results are presented in the Table 14.

The results are striking: all matching methods resulted in at least 18% decrease in probability of being circumcised for woman in Cote d'Ivoire due to high regime durability, then women in Guinea.